SEQUENCE LISTING

<110> MAY, Gregory D.
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ARNTZEN, Charles J.

<120> DNA Regulatory Elements Associated with Fruit Development

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<150> US 09/160,351
<151> 1998-09-25

<150> US 60/060,062
<151> 1997-09-25

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<170> PatentIn version 2.0

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Ala Ile Arg Ser Pro Ala Ser Leu Leu Leu Phe Ala Phe Leu Met Leu
             5                  10                  15

gcg ctc acg gga aga ctg cag gcc cgg cgc agc tca tgc att ggc gtc   153
Ala Leu Thr Gly Arg Leu Gln Ala Arg Arg Ser Ser Cys Ile Gly Val
         20                  25                  30

tac tgg gga caa aac acc gac gag gga agc tta gca gat gct tgt gcc   201
Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ala Asp Ala Cys Ala
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aca ggc aac tac gaa tac gtg aac atc gcc acc ctt ttc aag ttt ggc   249
Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe Lys Phe Gly
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atg ggc caa act cca gag atc aac ctc gcc ggc cac tgt gac cct cgg   297
Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys Asp Pro Arg
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aac aac ggc tgc gcg cgc ttg agc agc gaa atc cag tcc tgc cag gag   345
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cgt ggc gtc aag gtg atg ctc tcc atc gga ggt ggc ggg tct tat ggc   393
Arg Gly Val Lys Val Met Leu Ser Ile Gly Gly Gly Gly Ser Tyr Gly
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ctg agt tcc acc gaa gac gcc aag gac gta gcg tca tac ctc tgg cac   441
Leu Ser Ser Thr Glu Asp Ala Lys Asp Val Ala Ser Tyr Leu Trp His
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agt ttc ttg ggt ggt tct gct gct cgc tac tcg aga ccc ctc ggg gat   489
Ser Phe Leu Gly Gly Ser Ala Ala Arg Tyr Ser Arg Pro Leu Gly Asp
130                 135                 140                 145

gcg gtt ctg gat ggc ata gac ttc aac atc gcc gga ggg agc aca gaa   537
Ala Val Leu Asp Gly Ile Asp Phe Asn Ile Ala Gly Gly Ser Thr Glu
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cac tat gat gaa ctt gcc gct ttc ctc aag gcc tac aac gag cag gag   585
His Tyr Asp Glu Leu Ala Ala Phe Leu Lys Ala Tyr Asn Glu Gln Glu
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gcc gga acg aag aaa gtt cac ttg agt gct cgt ccg cag tgt cct ttc   633
Ala Gly Thr Lys Lys Val His Leu Ser Ala Arg Pro Gln Cys Pro Phe
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ccg gat tac tgg ctt ggc aac gca ctc aga aca gat ctc ttc gac ttc   681
Pro Asp Tyr Trp Leu Gly Asn Ala Leu Arg Thr Asp Leu Phe Asp Phe
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gtg tgg gtg cag ttc ttc aac aac cct tcg tgc cat ttc tcc cag aac   729
Val Trp Val Gln Phe Phe Asn Asn Pro Ser Cys His Phe Ser Gln Asn
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gct atc aat ctt gca aat gcg ttc aac aat tgg gtc atg tcc atc cct   777
Ala Ile Asn Leu Ala Asn Ala Phe Asn Asn Trp Val Met Ser Ile Pro
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gcg caa aag ctg ttc ctt ggg ctt cct gct gct cct gag gct gct cca   825
Ala Gln Lys Leu Phe Leu Gly Leu Pro Ala Ala Pro Glu Ala Ala Pro
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act ggt ggc tac att cca ccc cat gat ctc ata tct aaa gtt ctt ccg   873
Thr Gly Gly Tyr Ile Pro Pro His Asp Leu Ile Ser Lys Val Leu Pro
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atc cta aag gat tcc gac aag tac gca gga atc atg ctg tgg act aga   921
Ile Leu Lys Asp Ser Asp Lys Tyr Ala Gly Ile Met Leu Trp Thr Arg
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tac cac gac aga aac tcc ggc tac agt tct caa gtc aag tcc cac gtg   969
Tyr His Asp Arg Asn Ser Gly Tyr Ser Ser Gln Val Lys Ser His Val
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310 315 320

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Ala Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe Lys Phe
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Gly Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys Asp Pro
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Arg Asn Asn Gly Cys Ala Arg Leu Ser Ser Glu Ile Gln Ser Cys Gln
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Glu Arg Gly Val Lys Val Met Leu Ser Ile Gly Gly Gly Gly Ser Tyr
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Gly Leu Ser Ser Thr Glu Asp Ala Lys Asp Val Ala Ser Tyr Leu Trp
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His Ser Phe Leu Gly Gly Ser Ala Ala Arg Tyr Ser Arg Pro Leu Gly
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Asp Ala Val Leu Asp Gly Ile Asp Phe Asn Ile Ala Gly Gly Ser Thr
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Glu His Tyr Asp Glu Leu Ala Ala Phe Leu Lys Ala Tyr Asn Glu Gln
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Glu Ala Gly Thr Lys Lys Val His Leu Ser Ala Arg Pro Gln Cys Pro
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Phe Pro Asp Tyr Trp Leu Gly Asn Ala Leu Arg Thr Asp Leu Phe Asp
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Phe Val Trp Val Gln Phe Phe Asn Asn Pro Ser Cys His Phe Ser Gln
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Pro Ala Gln Lys Leu Phe Leu Gly Leu Pro Ala Ala Pro Glu Ala Ala
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Pro Thr Gly Gly Tyr Ile Pro Pro His Asp Leu Ile Ser Lys Val Leu
260 265 270

Pro Ile Leu Lys Asp Ser Asp Lys Tyr Ala Gly Ile Met Leu Trp Thr
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35 40 45

Ala Gly Ile Met Leu Trp Thr Arg Tyr His Asp Arg Asn Ser Gly Tyr
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Asn Gly Asn Glu Gly Ser Leu Ser Pro Lys Tyr Gly Gly Val Met Ile
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tacggtatcg atattgttga gaccgagaag agctacgtcg acnaggtgat cgttgccgca 180

gaagctgccg agcatgacgg caagtgcaag tgcggcgccg cctgcgcctg caccgactgc 240

aagtgtggca actgagaagc acttgtgtca ctaccactaa ataaaagttt gcaatgcata 300

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aattcgggca ggctgatagg ttgtaanatg ggataacgca gtatcatctg tgttatctct 420

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agtaatgaca atatataata tgttcgagta aataacttgg ggcttgcatg gctaatcgtt 300

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Asn
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Gly Asn Gln
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aatagagatt cctttggatg cttctcccgg tgggtgtgtg gagcacagac actgaatgtg 180

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tctaaagtta ttttaatttt gaagatcata tggctgacat ataaagcaaa tatgtcaaag 240

gtagttttca ccgtccacac gatagaaaca acaaagtagg gtaattaaat ttgttccgtc 300

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gccattaaag tctggtagga catagaaatt aatgaattaa actgtaacca taaggttgaa 780

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catcaaaagt ggcaggtgtg ctatctttgt tgtttcatcc cattaattta aacaaggcag 300

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aattaatttt tattattatt attaaactaa ttagactaac ctttttttt ttcaagagat 720

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Phe Ile Val Trp Tyr Leu Ala His Ser Arg Thr Pro Leu Phe Leu Glu
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Ile Glu Tyr Lys Ile Leu Leu Pro Ser Lys Val Ile Leu Ile Leu Lys
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Ile Ile Trp Leu Thr Tyr Lys Ala Asn Met Ser Lys Val Val Phe Thr
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Val His Thr Ile Glu Thr Thr Lys Gly Asn Ile Cys Ser Val Ile Thr
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Lys His Asn Thr Lys Ile Phe Thr Ser Asn Pro His Tyr Lys Ser Phe
100 105 110

Lys Leu Gln Leu Thr Met Arg Phe Ser Leu Pro Ala Thr Phe Phe Ser
115 120 125

Glu His Lys Asp Leu Pro Gln Pro Leu Thr Phe Asn Ile Ser Gly Leu
130 135 140

Trp Thr Arg Phe Leu Leu His Ala Lys Ile Arg Thr Lys Ile Arg Ser
145 150 155 160

Ser Tyr Ile Arg Asn Asp Pro Asn Arg Phe Glu Tyr Ser Pro Leu Gly
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Ile Asn Lys Ile Asn Lys Val Gly Ile Ser Tyr Phe Arg Lys Ser Phe
180 185 190

Glu Ser His Leu Ser His Leu Phe Leu Ile Lys Asn Asn Asn Asn Asn
195 200 205

Leu Ile Asn Leu Ile Gly Lys Lys Lys Ser Ser Leu Ala Ile Lys Val
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Trp Asp Ile Glu Ile Asn Glu Leu Asn Cys Asn His Lys Val Glu Phe
225 230 235 240

Leu Asn Thr Cys Thr Gly Lys Leu Ile Cys Ser His Val Ser Met Gln
245 250 255

Gln Phe Thr Ala Trp Cys Asp Phe His Asn Tyr Arg Leu Ile Pro Trp
260 265 270

Glu Ser Arg Ile Lys Arg Val Ser Asn Ile Leu Pro Ser Thr Met Met
275 280 285

Ala Val Arg Cys Val Ser Thr Pro Asn Phe Pro Ser Met Trp Asn Trp
290 295 300

Lys Ser Ser Arg Thr Asp Gly Pro Thr Arg Phe Val Gln Ser Gly Asp
305 310 315 320

Tyr Cys Ala Glu Asn Gly Trp Gln Val Ala Asn Val Pro Asp Leu Ile
325 330 335

Leu Lys Thr Val Asp Met His Ala Leu Ile Thr Ser Leu Pro Ser Leu
340 345 350

Thr Leu Leu Ile Asp Ala Ser Ser Leu Gly Gln Gly His Val Met Thr

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Arg Ile Tyr Ser Thr Ile Cys Asp Pro Tyr Ser Lys Trp Asn Lys Thr
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Ser Lys Ser Ser Ser Arg Ile Leu Glu Gly Ile Arg Met Val Gly Arg
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Lys Asn Lys Leu Leu Pro Phe Val Phe Phe Tyr Gln Glu Ala Lys Ser
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Phe Lys Arg Arg Val Asp Leu Arg Gly Cys Leu Cys Arg Asn Leu Tyr
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Ile Arg Ser Arg Asn Thr Ala Cys Thr Gln Thr Ile Ser Ala Gly Lys
        435                 440                 445

Lys Arg Thr Leu Leu Thr Glu Leu Leu Ser Trp Gln Gln Lys Leu Leu
    450                 455                 460

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Val Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu
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Ser His Ile Ile His Leu Ile Val Ser Ser Tyr Lys Phe Ile Arg Val
            500                 505                 510

Phe Ile Arg Val Gln Ala Phe Gly Asn Leu Ile Met Val Gly Tyr Ile
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Phe Lys Thr Cys Asn Leu His Phe Val Ser Leu Phe His Ala Ile Phe
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Phe Ser Leu Ile Gly Leu Arg His Leu Leu Glu Leu Ala His Met Leu
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Phe Lys Tyr Leu Gly Leu Leu Val Asn Gly Lys Lys Leu Ile Asp Phe
                565                 570                 575

Arg Tyr Asn Ala Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr
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Ile Tyr Ile Tyr Ile Tyr Tyr Arg Lys Leu Gly Ile Ile His Thr Tyr
        595                 600                 605

Val Arg Phe Ile Ile Lys Val Val Leu Ser Met Gln Ile Ser Leu Thr
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Pro Leu Ala Asp Ala Arg Pro Ile Cys Leu Ile Ile Phe His Arg Ala
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Pro Gln Leu Ser Leu Arg Cys Val Leu Leu Gln Glu Cys Asn Arg Leu
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Val Ser Ala Thr Glu Cys Ser Ala Thr Ile Phe Pro Arg Pro Ala Arg
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Trp Ser Val Ser Thr Asn Pro Thr Thr Ser Arg Gly Asp Ser Thr Ile
675 680 685

Gln Thr Arg Pro Pro Cys Lys Pro Ser Gly Thr Pro Thr Ser Lys Ser
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Cys Trp Met Ser Pro Asp Pro Thr Cys Ser His Trp Pro Pro Ile Leu
705 710 715 720

Arg Pro Pro Ala Thr Gly Ser Gly Gly Thr Ser Ser Pro Thr Gly Pro
725 730 735

Ala Ser Pro Phe Asp Thr Leu Ser Glu Thr Ser Ser Pro Asp Arg Ile
740 745 750

Trp Arg Ser Thr Ser Ser Pro Pro Cys Ala Thr Ser Thr Met Leu Cys
755 760 765

Pro Arg Leu Ala Cys Lys Thr Arg Ser Arg Ser Arg Pro Arg Ser Thr
770 775 780

Arg Ala Ser Ser Ala Arg Pro Thr Leu Pro Pro Pro Ala Pro Ser Pro
785 790 795 800

Pro Pro Pro Arg Arg Thr Ala Pro Ser Cys Ser Ser Trp Arg Val Thr
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Glu Arg Arg Ser Trp Ser Met Cys Thr Leu Ile Leu Ala Thr Pro Ala
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Thr Arg Asp Arg Ser Arg Cys Pro Thr Pro Cys Ser Arg Pro Pro Ala
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Ser Ser Cys Arg Met Gly Asp Ser Ala Ile Arg Thr Cys Ser Thr Pro
850 855 860

Ser Ser Thr Arg Ser Ser Arg Arg Trp Arg Glu Trp Glu Gly Arg Thr
865 870 875 880

Trp Arg Trp Trp Cys Arg Arg Ala Gly Gly Arg Arg Arg Ala Glu Glu
885 890 895

Pro Lys Arg Ala Pro Ala Thr Arg Arg Arg Thr Thr Arg Thr Ser Gly
900 905 910

Met Leu Ala Glu Glu Arg Arg Gly Asp Gln Gly Arg Arg Ser Arg His
915 920 925

Thr Tyr Ser Arg Cys Ser Thr Arg Thr Arg Arg Leu Glu Gly Ser Ser
930 935 940

Arg Thr Leu Ala Cys Phe Ile Pro Thr Ser Ser Pro Tyr Thr Lys Ala
945 950 955 960

Phe Arg Asn Leu Val Arg Leu Met Asn His Leu Leu Pro Thr Tyr Leu
965 970 975

Pro Thr Asn Lys Thr Asn Lys Ala Pro Lys Arg Glu Asn Ser Asp Leu

980 985 990

Gly Glu Ser Ile Met Met Ile Tyr Asn Lys His Pro Ser Leu Leu Ile
995 1000 1005

Ile Ser Met Leu Gln Val Ser Asn Leu Asn Gly Ser Gln Phe Gly Pro
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Thr Ser Ile Leu Gly His Asn Tyr Phe Ile Glu Leu Tyr Ile Gln Lys
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Lys Met Cys Leu Glu Cys Leu Ile Gln Tyr Asp Phe Ser Leu Gln Asp
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Tyr Leu Phe Ser Val Ser Phe Ser Met Pro Lys Asn His His Leu Leu
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Trp Gly Met Phe Tyr Thr Leu Met Val Leu His His His His Ser Cys
1075 1080 1085

Phe Ile Leu Gly Leu Val Leu Phe Ile Ile Thr Lys Phe Gly Ser Leu
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Leu Asn Thr Lys Phe Phe Ser His Leu Lys Leu Phe Phe Arg Ser Tyr
50 55 60

Gly His Ile Lys Gln Ile Cys Gln Arg Phe Ser Pro Ser Thr Arg Lys
65 70 75 80

Gln Gln Ser Arg Val Ile Lys Phe Val Pro Ser Ser Gln Ser Thr Thr
85 90 95

Pro Lys Tyr Ser Leu Asn Gln Ile Leu Thr Ile Asn Asn Asn Pro Ser
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Asn Cys Asn Ser Lys Gln Gly Ser Leu Ser Gln Gln Arg Ser Phe Leu

115 120 125

Asn Thr Lys Ile Cys His Asn Leu Ser Leu Leu Ile Ser Val Val Ser
130 135 140

Gly Gln Asp Ser Cys Cys Thr Leu Lys Phe Glu Leu Lys Ser Asp Arg
145 150 155 160

Val Ile Ser Val Ile Glu Ile Asp Asp Arg Thr Asp Phe Lys Ser Thr
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Leu Arg Asn Leu Gly Leu Ile Lys Leu Ile Arg Val Ser Val Ile Leu
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Asp Asp Lys Asn Leu Asp Ser Leu Asn Leu Ile Leu Val Thr Tyr Phe
195 200 205

Leu Lys Ile Ile Ile Ile Ile Leu Ile Leu Glu Lys Lys Lys Val Leu
210 215 220

Pro Leu Lys Ser Gly Arg Thr Lys Leu Met Asn Thr Val Thr Ile Arg
225 230 235 240

Leu Asn Phe Thr His Val Gln Glu Asn Phe Val Glu Val Met Ser Asn
245 250 255

Gln Cys Ser Ser Leu Gln Leu Gly Val Thr Ser Thr Thr Ile Gly Leu
260 265 270

Ser Pro Gly Ser Arg Gly Ser Asn Val Ala Ile Phe Ser Leu Pro Asp
275 280 285

Asp Lys Leu Trp Leu Leu Gly Val Ala Leu Gln Ile Phe His Gln Cys
290 295 300

Gly Ile Gly Arg Val His Ala Leu Thr Asp Gln Leu Gly Leu Phe Ser
305 310 315 320

Leu Val Thr Thr Ala Glu His Glu Lys Met Val Asp Gly Ser Lys Leu
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Gln Met Tyr Leu Thr Ser Ser Arg Leu Leu Ile Arg Cys Met His Leu
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Arg Leu Phe His Leu Leu Phe Ser Met His Arg Leu Asn Val Lys Asp
355 360 365

Met Gln Glu Ser Ile Pro Leu Phe Val Thr His Ile Pro Asn Gly Thr
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Arg Leu Pro Ser Pro His Pro Glu Phe Trp Lys Gly Gly Trp Trp Gly
385 390 395 400

Glu Arg Thr Ser Cys Cys Leu Ser Phe Ser Ser Ile Arg Lys Pro Arg
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Val Ser Arg Gly Gly Thr Gly Asp Asp Ala Cys Val Glu Thr Ser Ile
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Gly Val Gly Thr Gln His Val Asp Glu His Lys Pro Phe Gln Arg Gly
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Arg Arg Glu Pro Phe Gln Ser Cys Cys His Gly Asn Lys Ser Phe Ser
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Leu His Lys Arg Leu Cys Leu Ala Gly Phe Ser Pro Cys Ser Ser Ser
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Asn Lys Phe Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser
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Leu Ser Leu Ile Leu Tyr Ile Leu Leu Ala Leu Thr Asn Leu Leu Gly
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Phe Leu Glu Phe Lys Leu Leu Val Ile Ser Trp Val Ile Phe Ser Lys
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Leu Val Thr Cys Ile Leu Ser Leu Tyr Phe Met Gln Tyr Ser Phe Pro
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Leu Ala Tyr Val Ile Tyr Leu Ser Leu Ile Cys Asn Cys Leu Asn Ile
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Trp Asp Tyr Trp Leu Thr Asp Lys Lys Asn Leu Ile Leu Asp Thr Met
565 570 575

Leu Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr
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Ile Tyr Ile Ile Ile Gly Arg Asn Leu Val Phe Thr Arg Met Phe Ala
595 600 605

Leu Ser Glu Asn Glu Ser Phe Gln Cys Arg Leu Val Leu Leu His Leu
610 615 620

Gln Met His Asp Gln Phe Ala Ser Ser Ser Ile Glu His His Ser Val
625 630 635 640

Ser Asp Val Phe Tyr Cys Arg Ser Ala Ile Asp Trp Cys Leu Leu Arg
645 650 655

Asn Ala Arg Gln Gln Ser Ser Pro Ala Gln Arg Gly Gly Gln Ser Leu
660 665 670

Gln Ile Gln Gln His Arg Glu Asp Glu Thr Leu Arg Ser Lys Pro Gly
675 680 685

Arg Pro Ala Ser Pro Gln Glu Leu Gln His Pro Ser Pro Val Gly Cys
690 695 700

Pro Pro Ile Arg Arg Ala Val Thr Gly Leu Gln Ser Phe Gly Arg Arg
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Arg Leu Asp Pro Glu Glu Arg Arg Arg Leu Leu Ala Gln Arg Leu Leu
725 730 735

Ser Ile His Ser Cys Arg Lys Arg Ala Asp Pro Arg Ile Gly Ser Gly

740 745 750

Ala Val His Pro Pro Arg His Ala Gln His Leu Gln Cys Phe Val Leu
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Gly Trp Pro Ala Lys Pro Asp Gln Gly Leu Asp Arg Gly Arg His Gly
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Arg Pro Arg His Val Leu Pro Ser Leu Arg Arg Arg Leu Leu Leu Arg
785 790 795 800

Arg Pro Gly Val Pro Glu Pro His Arg Ala Val Leu Gly Glu Arg Ser
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Ala Ala Pro Gly Gln Cys Val Pro Leu Phe Leu His Arg Gln Pro Gly
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Thr Asp Leu Ala Ala Leu Arg Pro Val His Gly Leu Arg Arg Arg Arg
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Ala Gly Trp Ala Ile Gln Leu Ser Glu Pro Val Arg Arg His Arg Arg
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Gly Gly Val Gly Glu Arg Val Ala Val Gly Gly Arg Arg Ser Arg Ser
885 890 895

Glu His Gln Gln Arg Ala Asp Val Gln Pro Glu Leu Asp Gln Ala Cys
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Trp Arg Arg Asn Ala Glu Glu Thr Arg Glu Gly Asp Arg Gly Ile His
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Ile Arg Asp Val Gln Arg Glu Pro Glu Gly Trp Arg Asp Arg Ala Glu
930 935 940

Leu Trp Pro Val Leu Ser Gln Gln Ala Ala Arg Ile Pro Asn Leu Leu
945 950 955 960

Glu Thr Asn Leu Gly Ile Ile Ser Tyr Leu Pro Thr Tyr Leu Arg Ile
965 970 975

Lys His Glu Ile Lys His Gln Asn Lys Gly Arg Ile Leu Ile Leu Glu
980 985 990

Lys Val Glu Ser Tyr Ile Thr Asn Thr Pro Leu Tyr Ser Leu Ser Val
995 1000 1005

Cys Tyr Lys Phe Leu Glu Thr Thr Asp His Asn Leu Asp Leu Gln Val
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Val Trp Ser Ala Tyr Ser Met Thr Ser Val Cys Lys Ile Thr Ser Ser
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Phe Thr Pro Cys Tyr Ile Ile Ile Ile His Val Ser Phe Val Ser Cys
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Ser Leu Tyr Arg Ser His Lys Ser Leu Asp Arg Phe Lys Phe Leu Gly
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Phe Tyr Cys Leu Val Phe Ser Leu Thr Phe Pro Asp Ser Ser Ile Phe
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Gly Asp Ile Gln Asn Ser Ser Pro Ile Ser Tyr Phe Asn Phe Glu Asp
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His Met Ala Asp Ile Ser Lys Tyr Val Lys Gly Ser Phe His Arg Pro
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His Asp Arg Asn Asn Lys Val Gly Leu Asn Leu Phe Arg His His Lys
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Ala Gln His Gln Asn Ile His Leu Ile Lys Ser Ser Leu Ile Ile Ile
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Leu Gln Thr Ala Thr Leu Asn Asn Glu Val Leu Ser Pro Ser Asn Val
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Leu Phe Thr Gln Arg Phe Ala Thr Thr Leu Ala Asp Phe Tyr Gln Trp
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Ser Leu Asp Lys Ile Leu Val Ala Arg Asn Ser Asn Asn Gln Ile Glu
145 150 155 160

Leu Tyr Pro Leu Arg Leu Met Thr Glu Pro Ile Leu Arg Val Leu Ser
165 170 175

Val Thr Trp Asp Asn Gly Arg Tyr Gln Leu Phe Met Ile Lys Ile Leu
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Ile Val Ile Ser Ser Ser Leu Ile Phe Asn Lys Phe Asp Ser Asp Trp
195 200 205

Lys Lys Lys Lys Phe Ser Ser His Ser Leu Val Gly His Arg Asn Ile
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Lys Leu Pro Gly Ile Phe Glu His Met Tyr Arg Lys Ile Asp Leu Leu
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Lys Ser Cys Leu Ile Asn Ala Ala Val Tyr Ser Leu Val Leu Pro Gln
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Leu Ala Tyr Pro Leu Gly Val Glu Asp Gln Thr Cys Glu Gln Tyr Ser
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Pro Phe Leu Met Ile Asn Tyr Asp Gly Cys Val Cys Lys His Ser Lys
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Phe Ser Ile Asn Val Glu Leu Glu Glu Phe Thr His Arg Thr Asn Ser
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Val Cys Ser Val Trp Leu Leu Leu Ser Met Arg Lys Trp Leu Met Val
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Ala Ser Cys Lys Cys Thr Pro His Leu Lys Asp Cys Leu Asp Ala Cys
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Ile Asp Tyr Val Ser Ser Ile Phe Asn Ser Phe Asp Arg Cys Ile Val
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Leu Ile Arg Ser Arg Thr Cys Asp Asp Lys Asn Leu Phe His Tyr Leu
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Pro Ile Phe Gln Met Glu Gln Asp Phe Gln Val Leu Ile Gln Asn Phe
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Gly Arg Asp Lys Asp Gly Gly Glu Lys Glu Gln Ala Val Ala Phe Arg
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Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Leu Val Glu Thr Trp
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Tyr Asn Ser His Val Cys Ser Leu Tyr Asn Lys Met Ser Ser Pro Phe
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Asn Ala Asp Ser Tyr Ser Thr Cys Arg Cys Thr Thr Asn Leu Leu Asp
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His Leu Pro Ser Thr Thr Ala Lys Ser Pro Met Cys Ser Thr Ala Gly
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Val Gln Ser Ile Gly Val Cys Tyr Gly Met Leu Gly Asn Asn Leu Pro
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Pro Pro Ser Glu Val Val Ser Leu Tyr Lys Ser Asn Asn Ile Ala Arg
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Met Arg Leu Tyr Asp Pro Asn Gln Ala Ala Leu Gln Ala Leu Arg Asn
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Glu Leu Ile Pro Gly Ser Asp Leu Ala Gln Tyr Ile Leu Pro Ala Met
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Arg Asn Ile Tyr Asn Ala Leu Ser Ser Ala Gly Leu Gln Asn Gln Ile
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Lys Val Ser Thr Ala Val Asp Thr Gly Val Leu Gly Thr Ser Tyr Pro
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Pro Asn Lys Gln Pro Val Tyr Gln Ile Ser Phe Lys Leu Thr Cys Lys
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Val Asp Glu Ser Ser Pro Thr Tyr Leu Pro Thr Tyr Glu Asn Met Lys
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Ser Thr Lys Ile Lys Gly Glu Phe Ser Trp Arg Lys Leu Asn His Asp
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Asp Ile Gln Thr Pro Leu Phe Thr His Tyr Gln Tyr Val Thr Ser Phe
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Leu Phe His Thr Ile Tyr Ser Lys Lys Asp Val Phe Gly Val Leu Asn
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Ile Asp His Ile Lys Val Trp Ile Ala Ser Ser Phe Val Thr Leu Tyr
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<213> Musa acuminata

<220>
<221> misc_feature
<222> (82)..(1093)
<223> Nucleotides 82, 601, 628, 641, 655, 692, 725, 774, 793, 806, 813, 854, 867, 870, 876, 882, 890, 919, 946, 959, 965, 995, 999, 1002, 1028, 1043, 1054, 1075, 1093 are n wherein n = a or g or c or t/u.

<220>
<221> misc_feature
<222> (1515)..(4574)
<223> Nucleotides 1515, 2166, 2216, 2265, 2345, 2533, 2870, 2917, 3077, 3337, 3356, 3618, 3627, 3754, 3810, 3819, 3884, 3893, 4494, 4503, 4524, 4533, 4568, 4574 are n wherein n = a or g or c or t/u.

<220>
<221> misc_feature
<222> (4597)..(5708)
<223> Nucleotides 4597, 4654, 4724, 4741, 4719, 4852, 5027, 5233, 5546, 5565, 5567, 5575, 5578, 5618, 5619, 5650, 5669, 5672, 5677, 5683, 5694, 5704, 5708 are n wherein n = a or g or c or t/u.

<220>
<221> misc_feature
<222> (5732)..(5872)
<223> Nucleotides 5732, 5741, 5754, 5758, 5772, 5778, 5780, 5784, 5788, 5802, 5804, 5808, 5813, 5820, 5824, 5832, 5834, 5836, 5854, 5858, 5863, 5872 are n wherein n = a or g or c or t/u.

<220>
<221> misc_feature
<222> (5875)..(6863)
<223> Nucleotides 5875, 5889, 5915, 5922, 5940, 5990, 6006, 6011, 6344, 6401, 6416, 6596, 6600, 6608, 6612, 6712, 6748, 6753, 6756, 6762, 6830, 6844, 6847, 6863 are n wherein n = a or g or c or t/u.

<220>
<221> misc_feature
<222> (6910)..(7395)
<223> Nucleotides 6910, 6965, 6968, 7070, 7116, 7179, 7291, 7322, 7325, 7345, 7351, 7359, 7387, 7395 are n wherein n = a or g or c or t/u.

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<220>
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<222> (82)..(959)
<223> Nucleotides 82, 601, 628, 640, 655, 692, 725, 774, 793, 806, 813, 854, 867, 870, 876, 882, 890, 919, 946, 959

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<223> Nucleotides 965, 995, 999, 1002, 1028, 1033, 1054, 1075, 1093, 1515, 2166, 2216, 2265, 2345, 2533, 2870, 2917, 3077, 3337, 3356

<220>
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<222> (3618)..(5027)
<223> Nucleotides 3618, 3627, 3754, 3810, 3819, 3884, 3893, 4494, 4503, 4524, 4533, 4568, 4574, 4597, 4654, 4724, 4741, 4759, 4852, 5027 are n wherein n = a or g or c or t/u.

<220>
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<222> (5253)..(5758)
<223> Nucleotides 5253, 5546, 5565, 5567, 5575, 5578, 5618, 5619, 5650, 5669, 5672, 5677, 5683, 5694, 5704, 5708, 5732, 5741, 5754, 5758 are n wherein n = a or g or c or t/u.

<220>
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<222> (5772)..(5889)
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<222> (5915)..(6844)
<223> Nucleotides 5915, 5922, 5950, 5990, 6006, 6011, 6344, 6401, 6416, 6596, 6600, 6608, 6612, 6712, 6748, 6753, 6756, 6762, 6830, 6844 are n wherein n = a or g or c or t/u.

<220>
<221> misc_feature
<222> (6847)..(7395)
<223> Nucleotides 6847, 6863, 6910, 6965, 6968, 7070, 7116, 7179, 7291, 7322, 7325, 7345, 7351, 7359, 7387, 7395 are n wherein n = a or g or c or t/u.

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Gly Ser Phe Thr Ala Gly Arg Asn Pro Phe Leu Tyr Ile Ser Thr Thr
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Asp Ala Arg Ala Asn Ala Ala Val Ala Ala Val Ala Ala Val Ala Ala

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Trp Pro Arg Ser Ser Ala Pro Pro Ser Ser Ser Arg Cys Ser Ile Ala
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Thr Thr Gln Pro Ala Pro Ala Arg Val Ser Thr Arg Thr Thr Pro Ser
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Ser Pro Pro Pro Thr Pro Ser Ala Gly Ser Gly Arg Pro Ala Thr Thr
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Gln Glu Glu Xaa Gly Asp Arg Gly Phe Leu Gly Ala Xaa Val Ser Arg
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Xaa Asp Arg Phe Xaa His Leu Pro Lys Leu Val Asn Cys Leu Trp Asp
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Xaa Lys Leu Asn Val Trp Gly Leu Ala Gly Gly Xaa Ala Thr Arg Pro
195 200 205

Met Val Arg Thr Pro Trp Val Thr Ala Ser Ser Xaa Asn Lys Thr Leu
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Ile Gly Xaa Leu Arg Pro Xaa Ser Xaa Trp Pro Cys Ala Ala Ala Lys
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Asn Thr Thr Ala Glu Ala Xaa Pro Asn Phe Xaa Val Ser Xaa Ile Leu
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Thr Val Xaa Arg Arg Asp Arg Val His Asn Asp Ala Xaa Ser Asn Ala
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Gly Glu Pro Ser Val Xaa Thr Xaa Ser Thr Thr Gln Thr Trp Trp Pro
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Xaa Thr Arg Pro Ser Xaa Ser Arg Arg Xaa Cys Gly Phe Gly Leu Xaa
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Ser Arg Pro Ser Arg Xaa Ala Thr Thr Pro Gly Ala Gly Arg His Pro
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Thr Ser Ser Met Glu Gly Trp Ser Ala Gly Lys Gly Thr Met Pro Gly
355 360 365

Trp Arg Ile Gly Ser Ala Ser Thr Arg Gly Thr Ala Thr Cys Trp Gly
370 375 380

Ala Thr Glu Thr Thr Trp Thr Ala Thr Thr Arg Asp Pro Leu Leu Leu
385 390 395 400

Gln Gln Leu Gln Pro His Ser Ser Gly Glu Leu Trp Arg Gln Leu Gly
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Val Leu Gln Pro Glu Thr Leu Tyr Leu Val Arg Tyr Tyr Cys Asp Glu
420 425 430

Ser Met Arg Asn Lys Arg Tyr Tyr Asp Ser Asp Ser Val Ser Leu Lys
435 440 445

Leu Arg Arg Lys Ser Ser Ile Lys Ala Xaa Leu His Thr Trp Pro Thr
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Thr Ile Val Asp Arg Asp His Met His Pro Ser Asn Val Leu Lys Cys
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Leu Gly Val Ser Lys Cys Val Phe Asp Arg Asn Glu Asp Val Arg Ile
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Asn Tyr Val Asn His Gly Lys Phe Arg Phe Val Cys Thr Val Glu Met
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Ile Cys Leu Val Ser Tyr Leu Met Thr Met Asn His Ile Val Phe Thr
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Asn Ile Asn Ala Ser Leu Ala Ser Gln Phe Cys Thr Phe Val Pro Xaa
645 650 655

Leu Lys Cys Ser Tyr Gly Leu Thr His Pro Glu Cys Met Val Ser Arg
660 665 670

Xaa Leu Glu Arg Val Asn Pro Arg Ser Ser Gly Ala Thr Leu Xaa Ser
675 680 685

Ala Glu Val Glu Asp His Ser Phe Ser Tyr Pro Leu Gly Ala Tyr Ile
690 695 700

Lys Val Glu Ile Met Arg Gly Ile Xaa Asn Ser Thr Tyr Ser Ile Phe
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Glu Leu Ala Arg Val Gly Val Thr Cys Met Arg Phe Asp Pro Gln Cys

725 730 735

Ser Ser Trp Gly Arg Phe Tyr Thr Tyr Ser Cys Met Ser Tyr Ile Val
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Ala Leu Ile Ile Phe Ser His His Arg Thr Leu Gly Ala Cys Ile Val
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Pro Asn Thr Leu Tyr Cys Leu Ile Arg Pro Arg Ala Lys Arg Val Gln
785 790 795 800

Arg Asn Cys Val Lys Trp Leu Ala Gly Leu Gly Leu Met Ala Leu Ser
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Trp Leu Asp Thr Thr His Arg Leu Arg Asp Thr Met Pro Ser Leu Leu
820 825 830

Trp Leu Thr Cys His Val Gly Trp Met Pro Lys Tyr Ala Ile Ser Phe
835 840 845

Ser Pro Tyr Lys Gly Val Val Pro Glu Asn Arg Gly His Gly Leu Gly
850 855 860

Ser Val Val Gly Pro Cys Ser Pro Gln Leu Gly Gly Leu Leu His Gln
865 870 875 880

Val Gly Xaa Leu Leu Ala Gly Gln Ser Thr Leu Gly Arg Asp Gly Arg
885 890 895

Asp Lys Xaa Lys Glu Gly Trp Leu Arg Leu Gly Phe Arg Gln Ser Ile
900 905 910

Val Tyr Glu Ala Asn Gly Ile Pro Pro Leu Gly Cys Leu Leu Val Ser
915 920 925

Ile Cys Cys Asp Gly Leu Phe Val Val Gly Gly Leu Val Arg Leu Leu
930 935 940

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Leu Ile Thr Leu Asp Lys Arg Gly Thr Met Tyr Asn Trp Glu Ala Gln
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Tyr Asp Ile Asn Leu Arg Pro Ala Leu Val Asn Xaa Leu Ile Xaa Val
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Pro Xaa Ile Xaa Met Glu Val Asp Lys His Asp Asp Asp Gly Tyr Met
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Phe Met Cys Leu Ser Lys Ser Ile Lys Leu Glu Ser Asn Lys Thr Ile
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Lys Val Gly Arg Pro Leu Ser Ser Met Ser Arg Ser Ser Thr Phe Gln
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Lys Asp Glu Phe Ile Phe Ile Arg Ala Leu Gln Ser Cys Leu Ile Ile
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Val Ala Glu Ser Trp Gln Xaa Leu Lys Arg Leu Phe Val Glu Val Lys
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Glu Thr His Val Tyr Lys Asn Cys His Asp Tyr Thr Leu Lys Lys Lys
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Glu Glu Leu Phe Val Asp Ala Val Gln Thr Phe Val Ser Thr Asp Gly
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Asp Leu Ser Lys Asp Leu Pro Leu Arg Phe Pro His Ala Pro His Leu
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Phe Gln Arg Lys Leu His Ser Gly Gln Glu Ser Ile Ser Leu Tyr Lys
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His His Leu Pro Pro Thr Pro Pro Pro Pro Pro Pro Leu Leu Arg Arg
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Met Lys Ala Leu Leu Leu Val Ile Phe Thr Leu Ala Ser Ser Leu Gly
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Xaa Xaa Ser Arg Gly Ser Ser Xaa Xaa Tyr Xaa Thr Xaa Xaa Cys Ile
1825 1830 1835 1840

Gly Xaa Gly Thr Trp Val Val His Arg Ala Xaa Trp Pro Phe Ala Trp
1845 1850 1855

Gly Tyr Cys Phe Val Gln Xaa Gln Asn Pro His Arg Thr Thr Ala Ser
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Pro Ala Arg Xaa Gly Arg Ala Leu Xaa Ala Xaa Asn Thr Thr Ala Glu
1875 1880 1885

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1890 1895 1900

Pro Ser Ala Pro Thr Cys Ser Thr Thr Gln Thr Trp Trp Pro Pro Thr
1905 1910 1915 1920

Arg Pro Ser Pro Ser Arg Arg Leu Cys Gly Ser Gly Leu Leu Ser Arg
1925 1930 1935

Pro Ser Arg Arg Ala Thr Thr Pro Gly Ala Gly Arg His Pro Thr Pro
1940 1945 1950

Thr Gly Arg Pro Glu Gly Phe Arg Ala Thr Val Ser Pro Pro Thr Ser
1955 1960 1965

Ser Met Glu Gly Trp Ser Ala Gly Lys Gly Pro Met Pro Gly Trp Arg

1970 1975 1980

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1985 1990 1995 2000

Glu Thr Thr Trp Thr Ala Thr Thr Xaa Val Pro Leu Leu Xaa Pro Ile
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Ala Thr Pro Val Asp Cys Arg Ser Cys Gly Gly Asn Leu Gln Lys Leu
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Ser Thr Ser Ser Trp Pro Ser Ile Ile Val Asp Arg Arg Gln Met His
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Lys Met Leu Glu Ile Lys Leu Phe Ile Phe Tyr Asn Tyr Lys Tyr Phe
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Asn Ile Phe Phe Asn Leu Lys Asp Pro Lys Lys Ser Xaa Tyr Lys Asp
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Phe Ile Tyr Gly Leu Gly Tyr Xaa Xaa Xaa Ile Xaa Lys Ile Asn Ile
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Leu Leu Ile Leu Arg Ile Leu Lys Lys His Asn Tyr Lys Asp Phe Leu
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His Gln Trp Arg Val Gly Val Arg Glu Arg Val Arg Cys Gln Gly Gly
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Ile Phe Tyr Met Asp Trp Asp Ile Asn Ser Ile Tyr Leu Lys Phe Tyr
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Lys Asn Phe Lys Phe Lys Asn Asn Thr Lys Asn Ile Ile Arg Ser Asp
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Arg Glu Arg Asp Asp Asp His Glu Ile Glu Val Glu Ser Lys Lys Glu
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Pro Trp Thr Pro Asn Ile His Asn Arg His Ala Ile Thr Met Leu Ser
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Tyr Val Ser Leu Ser His Ile Leu Pro Ile Thr Ser Ser Arg Ile Leu
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Leu Thr Arg Gly Leu Val Glu Gly His Arg Pro Cys Xaa Leu Arg Gln
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Arg Leu Lys Ile Thr Pro Leu Ala Ile Arg Trp Val Pro Ile Arg Ser
690 695 700

Lys Ser Gly Gly Phe Xaa Thr Arg Pro Ile Gln Tyr Leu Ser Gln Glu
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Val Ser Tyr Gly Leu Glu Gln Ser Val Cys Arg Gly Thr Val Ser Ser
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Gly Trp Leu Ala Ser Gly Ser Trp His Val Gly Ser Ile Gln His Ile
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Cys His Arg Arg Ile Val Asp Thr Ala Trp Val Leu Trp Ser Val Leu
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Val Arg Leu Ser Trp Val Asp Tyr Phe Ile Lys Leu Ala Xaa Cys Trp
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Leu Gly Lys Val His Leu Val Gly Met Val Glu Thr Xaa Pro Arg Lys
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Val Gly Asp Leu Val Phe Asp Asn Gln Leu Phe Met Arg Arg Met Val
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Ser Leu Arg Trp Gly Val Cys Ser Phe Arg Phe Val Ala Met Asp Cys
915 920 925

Leu Leu Glu Ala Trp Phe Asp Cys Ser Val Gly Arg Arg Tyr Leu Xaa
930 935 940

Arg Ser Ser Ile Pro Cys Ser Glu Lys Asp Leu Pro Arg Ser Leu Ala
945 950 955 960

Arg Pro Cys Ser Gln Arg Met Cys Met Ser Arg Ser Ile Gln Pro Cys
965 970 975

Gly Ser Arg Met His Gln Leu Gly Leu Ala Cys Ser Arg Leu Lys Gln
980 985 990

Lys Asp Ile Leu Ala Thr Arg Phe Ala Gln Pro Cys Gly Ser Asn Gln
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Met His Leu Leu Gly Leu Ala Leu Thr Arg Gln Trp Thr Leu Val Ser
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Glu Lys Gly Leu Xaa Lys Thr Leu Ala Arg Thr Ser Arg Tyr Leu Leu
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Asp Asn Arg Cys Leu Val Met Asp Leu Arg Leu Ser Arg Gln Arg Leu
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Ala Glu Thr Trp Ala Met Asp Ala Tyr Lys Glu Arg Met Ala Arg Asp
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Arg Ser Asn Asn Tyr Lys Phe Ile Lys His Leu Met Asp Ala Tyr Lys
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Glu Arg Thr Asp Arg Asp Arg Ser Asn Asn Tyr Lys Phe Ile Lys Xaa
1090 1095 1100

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Arg His Lys Tyr Tyr Phe Gln Ile Leu Phe Ser Leu Ser Pro Ser Pro
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Pro Leu Pro Phe Ser Ile Phe Ser Ile Leu Ser His Asn Ile Arg Thr
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Val Asp Phe Pro Ser Asn Gln Ser Ser Trp Asn Arg Ile Arg Arg Leu
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Lys Gly Asp Asp His Val Gln Cys His Ala His Gln His Asn Ser Asn
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Thr Val Gln Lys Asp Leu Ile Leu His Leu Ala His Pro Ala Ala Gly
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Ile Asp Trp Arg Lys Arg Arg Val Ser Leu Pro Ile His Ile Gln Arg
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Thr Asn Ser Phe Ser Ser Asp Glu His Phe Ser Pro Ala Leu Tyr Phe
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Ile Ile Ile Ile Ile Ile Asn Met Val Ser Leu Gln Asn Ile Ile Phe
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Phe Gln Asn Ile Leu Lys Asn Asp Lys Gly Arg Arg Trp Ile Ser Asp
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Phe Tyr Cys Glu Gln Lys Ser Leu Val Arg Thr Ser Lys Met Cys Gln
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Met Asn Pro Asn Lys Trp Val Trp Ser Met Val Thr Met Arg Ser Val
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Phe Val Tyr Lys Lys Ile Ile Asn Leu Ile Phe Ile Phe Pro Leu Ile
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Ser Gly His Asp Ile Ser Ser Asn His Val Met Xaa Asp Glu Xaa His
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Ile Phe Xaa Lys Leu Xaa Ile Glu Lys Lys Asp Tyr Tyr Pro Phe Tyr
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Xaa Cys Xaa Ile Ile Phe Ser Leu Ser Ile Ile His Val Glu Glu Arg
1395 1400 1405

Leu Ser His Gln Ile Lys Tyr Arg Xaa Lys Ser Cys Phe Leu Asn Ser
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Lys Asn Asn Leu Pro Leu Leu Ile Ile Ser Leu Leu Ile Ser Ile Xaa
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Ile Tyr Ile Tyr Xaa Tyr Ile Asn Phe Xaa Ile Phe Leu Asn Leu Asn
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Arg Lys Pro Lys Gln Arg Trp Arg Lys Val Gly Arg Xaa Arg Asp Phe
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Ser Lys Arg Arg His Thr Ser Ile Arg Ile Val Met Thr Ile Arg Arg
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Lys Arg Gly Glu Arg Glu Arg Arg Lys Arg His Cys Pro Val Leu Ser
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Met Arg Asn Cys Leu Ser Thr Asn Glu Gln Tyr Lys His Leu Cys Arg
1570 1575 1580

Gln Ile Cys Ser Lys Gly Ser Phe Thr Ala Gly Arg Asn Pro Phe Leu
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Tyr Ile Ser Thr Thr Ser His Pro His His His His His His His Cys
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Gly Gly Arg Pro Cys Cys Trp Ser Phe Leu Pro Trp Pro Arg Arg Ser
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Ala Pro Ser Pro Ser Asn Ala Glu Gly Lys Pro Gly Gly Leu Ser Ala
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Pro Pro Ser Ser Ser Arg Cys Ser Ile Xaa Xaa Thr Gln Pro Ala Pro
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Ser Xaa Gly Ser Gly Xaa Pro Ala Thr Thr Pro Xaa Ile Xaa Xaa Xaa
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Gly Val Thr Ala Ser Ser Xaa Asn Arg Thr Leu Ile Gly Leu Leu Arg
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Lys Pro His Pro Asn Leu Ile Gln Leu Gln Leu Arg Ala Gly Arg Glu
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1845 1850 1855

Pro Asp His Leu Leu Gln Asp Gly Ser Val Val Leu Asp Asp Ser Ser
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Val Ala Gln Ala Val Val Pro Arg Arg Asp Asn Arg Glu Leu Asp Ala
1875 1880 1885

Ile Gln Arg Arg Pro Gly Gly Arg Lys Ala Ser Gly Leu Arg Cys His
1890 1895 1900

His Gln His His Gln Trp Arg Val Gly Val Arg Glu Arg Val Arg Cys
1905 1910 1915 1920

Gln Gly Gly Gly Asp Arg Leu Leu Gln Xaa Val Leu Arg Leu Ala Gly
1925 1930 1935

Gly Glu Leu Arg Arg Gln Leu Gly Leu Leu Gln Pro Xaa Ser Leu Tyr
1940 1945 1950

Leu Xaa Arg Tyr Tyr Val Arg Ile His Val Ile Thr Gln Thr Leu Leu
1955 1960 1965

Leu Lys Arg Leu Arg Glu Leu Ile Val Glu Val Ala Glu Glu Ile Phe
1970 1975 1980

Asn Lys Ser Ala Glu Gln Val His Gly Pro Gln Ser Ser Leu Ile Val
1985 1990 1995 2000

Val Arg Cys Ile His Gln Met Ser Trp Ser Xaa Xaa Met Arg Xaa Xaa
2005 2010 2015

Ser Val Asn Arg Cys Asn Lys Asn Tyr Leu Phe Phe Ile Ile Ile Asn
2020 2025 2030

Ile Leu Ile Tyr Phe Leu Ile Leu Lys Ile Leu Lys Asn Leu Ile Ile
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Arg Ile Leu Tyr Met Asp Trp Asp Thr Xaa Lys Xaa Xaa Leu Xaa Lys
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Ser Ser Tyr Gly His Lys Ser Gln Ser Ser Xaa Lys Ala Arg Ile Leu
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Tyr Val Gly Ala Cys Pro Glu Ile Leu Arg Gly His Arg Ser His Xaa
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Ser Thr Trp Arg Leu Lys Ile Thr Phe Ile Xaa Xaa Leu Val Asp Ser
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Thr Arg Leu Cys Asp Phe Pro His Ser Pro His Leu Val His Arg Lys
35 40 45

Leu His Ser Gly Gln Glu Ser Ile Ser Leu Tyr Lys His His Leu Pro
50 55 60

Pro Thr Pro Pro Pro Leu Pro Leu Leu Arg Arg Met Lys Ala Leu Leu
65 70 75 80

Leu Val Ile Phe Thr Leu Ala Ser Ser Leu Gly Ala Phe Ala Glu Gln
85 90 95

Cys Gly Arg Gln Ala Gly Gly Ala Leu Cys Pro Gly Gly Leu Cys Cys
100 105 110

Ser Gln Tyr Gly Trp Cys Gly Asn Thr Asp Pro Tyr Cys Gly Gln Gly
115 120 125

Cys Gln Ser Gln Cys Gly Gly Ser Gly Gly Ser Gly Gly Gly Ser Val
130 135 140

Ala Ser Ile Ile Ser Ser Ser Leu Phe Glu Gln Met Leu Lys His Arg
145 150 155 160

Asn Asp Ala Ala Cys Pro Gly Lys Gly Phe Tyr Thr Tyr Asn Ala Phe
165 170 175

Ile Ala Ala Ala Asn Ser Phe Ser Gly Phe Gly Thr Thr Gly Asp Asp
180 185 190

Pro Arg Arg Xaa Arg Arg Ser Arg Leu Ser Trp Arg Xaa Arg Leu Thr
195 200 205

Xaa Arg Gln Val Ile Xaa Thr Ser Pro Glu Ala Arg Lys Leu Phe Met
210 215 220

Gly Xaa Lys Thr Glu Cys Leu Gly Phe Gly Arg Trp Val Gly Asp Ala
225 230 235 240

Pro Asp Gly Pro Tyr Ala Leu Gly Tyr Cys Phe Val Gln Xaa Gln Asn
245 250 255

Pro His Arg Xaa Thr Ala Ser Xaa Leu Pro Xaa Ala Val Arg Cys Ser
260 265 270

Lys Lys Tyr Gly Arg Ser Pro Ser Lys Phe His Xaa Xaa Pro Xaa Ser
275 280 285

Xaa Ser Ser Ser Pro Arg Ser Ser Ser Gln Arg Cys Xaa Phe Arg Asn
290 295 300

Asn Pro Met Cys Xaa Ala Cys Ser Xaa Tyr Xaa Tyr Gly Pro Ala Gly
305 310 315 320

Arg Ala Ile Gly Ser Asp Xaa Xaa Asn Asn Pro Asp Leu Val Ala Thr
325 330 335

Asp Ala Thr Ile Ser Phe Lys Thr Xaa Leu Trp Phe Trp Met Thr Xaa
340 345 350

Gln Ser Pro Lys Pro Xaa Cys His Asp Val Ile Thr Gly Ser Trp Thr
355 360 365

Pro Ser Asn Ala Asp Gln Ala Ala Gly Arg Leu Pro Gly Tyr Gly Val
370 375 380

Thr Thr Asn Ile Ile Asn Gly Gly Leu Glu Cys Gly Lys Gly Tyr Asp
385 390 395 400

Ala Arg Val Ala Asp Arg Ile Gly Phe Tyr Lys Arg Tyr Cys Asp Leu

405 410 415

Leu Gly Val Ser Tyr Gly Asp Asn Leu Asp Cys Tyr Asn Gln Arg Pro
420 425 430

Phe Ala Ser Thr Ala Ala Thr Ala Thr Phe Arg Ala Met Glu Thr Thr
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Trp Ser Ala Thr Thr Arg Asp Pro Leu Leu Ser Pro Ile Leu Leu Arg
450 455 460

Ile His Val Ile Thr Gln Thr Leu Leu Leu Arg Arg Leu Arg Glu Leu
465 470 475 480

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485 490 495

Met Ala His Asn Tyr Arg Pro Ser Tyr Ala Ser Ile Lys Cys Pro Gln
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Met Ser Trp Ser Lys Met Arg Ile Arg Ser Val Lys Arg Cys Asn Lys
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Asn Leu Phe Phe Tyr Asn Tyr Lys Tyr Phe Asn Ile Phe Phe Asn Leu
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Lys Asp Pro Lys Asn Leu Ile Ile Arg Ile Leu Tyr Met Asp Trp Asp
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Val Phe Ser Ile Trp Ile Gly Ile Leu Thr Arg Phe Thr Tyr Lys Asn
580 585 590

Phe Asn Ile Lys Ile Leu Asn Leu Lys Ile Lys Ile Leu Lys Ile Ser
595 600 605

Lys Tyr Asn Gly Asn His Glu Ile Glu Asn Val Met Ile Glu Ile Met
610 615 620

Arg Ser Arg Leu Arg Val Lys Arg Lys Leu Arg Ser Trp Glu Ile Ser
625 630 635 640

Phe Cys Leu His Gly Arg Asp Gly Asp Arg Gly His Leu Thr Ser Thr
645 650 655

Thr Gly Met Gln Pro Cys Cys His Met Leu Ala Cys Leu Ile Ser Tyr
660 665 670

Asp His Glu Ser His Ser Leu His Glu Tyr Leu Ser Gln Leu Ser Ile
675 680 685

Thr Val Leu His Leu Cys Thr Ile Xaa Glu Val Phe Val Trp Leu Asp
690 695 700

Pro Ser Arg Val Tyr Gly Leu Pro Xaa Pro Gly Ala Cys Pro Glu Val
705 710 715 720

Leu Arg Gly Ile Asp Leu Val Xaa Leu Gly Arg Gly Arg Ser Leu Leu
725 730 735

Leu Ser Val Gly Cys Leu Tyr Lys Gly Arg Asn His Glu Gly Asp Ser
740 745 750

Leu Asp Leu Phe Asn Ile Ala Ser Lys Ser Trp Ser Tyr Val Tyr Glu
755 760 765

Val Arg Pro Pro Met Leu Phe Leu Gly Ser Leu Leu Tyr Leu Phe Leu
770 775 780

His Val Ile Ile His Ser Ser Phe Asn His Leu Gln Ser Ser Ser Tyr
785 790 795 800

Val Gly Cys Met His Cys Leu Ile Tyr Ser Ile Gln Xaa Arg Ser Thr
805 810 815

Leu Leu Pro Thr Tyr Tyr Val Ala Gln Tyr Ile Val Val Leu Ser His
820 825 830

Thr Ala Ser Ser Lys Ala Cys Ala Glu Glu Leu Cys Gln Val Val Gly
835 840 845

Trp Pro Arg Ala His Gly Ile Glu Leu Ala Arg Tyr Asn Thr Ser Ala
850 855 860

Gly Tyr His Ala Glu Ser Ile Val Val Val Asp Met Ser Cys Gly Val
865 870 875 880

Asp Ala Lys Ile Cys Tyr Ile Ile Leu Ser Leu Gln Arg Ser Cys Ala
885 890 895

Ile Gly Glu Ser Trp Thr Arg Leu Gly Phe Cys Gly Arg Ser Leu Phe
900 905 910

Ala Ser Val Gly Trp Ile Thr Ser Ser Ser Trp Pro Ser Val Gly Trp
915 920 925

Ala Lys Tyr Thr Trp Gly Trp Ser Arg Gln Xaa Gln Gly Arg Leu Ala
930 935 940

Lys Thr Trp Phe Ser Thr Ile Asn Cys Leu Gly Glu Trp Tyr Pro Ser
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Val Gly Val Ser Ala Arg Phe Gly Leu Leu Arg Trp Ile Val Cys Cys
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Val Gln Phe Asp His Val Glu Val Asn Lys Arg Thr Cys Gln Glu Val
995 1000 1005

Trp Leu Asp Arg Val Lys Ala Arg Glu Cys Val Cys Arg Gly Leu Phe
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Asn His Val Glu Ala Arg Glu Cys Thr Asn Cys Glu Val Trp Leu Ala

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His Val Ser Arg Arg Ile Tyr Leu Leu Arg Gly Leu Leu Asn His Val
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Glu Ala Ile Lys Cys Thr Cys Tyr Glu Val Trp Leu Asp Leu Leu Asp
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Leu Val Asp Lys Asp Leu Arg Leu Ser Gly Gln Trp Met Pro Ile Ser
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Lys Lys Gly Trp Leu Glu Ile Asn Lys Asp Gln Ile Ile Asn Ile Asn
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Asn Lys Asp Gln Ile Ile Asn Ile Ser Leu Asn Ser Xaa Tyr Xaa Ile
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Gly Gln Lys Arg Tyr Tyr Val Ile Leu Lys Leu Gly Gly Thr Asn Ile
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Ser His Asn Ile Ala Tyr Leu Asn Met Met Glu Met Asn Phe Ser Trp
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1475 1480 1485

Asn Thr Glu Xaa Asn His Ala Phe Asp Leu Ile Arg Lys Ile Ile Phe
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Ser Lys Xaa Tyr Phe Ile Asn Ile Tyr Gln Asn Lys Lys Ile Asn Ile
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Ser Ser Ala Ser Cys Ser Lys Cys Lys Asn Leu Asn Xaa Asp Leu Glu
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His Lys Ile Pro Asn His Tyr Phe Tyr Leu Met Lys Thr Lys Pro Tyr
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Lys Arg Ile Leu Leu Tyr Ile Tyr Ile Tyr Ile Tyr Tyr Phe Thr Tyr
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Glu Gly Ser Ala Thr Val Asp Arg Ser Cys Pro Gly Ile Val Cys Arg
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1650 1655 1660

Ser Gly Ile Pro Thr Arg Asn Leu Pro Leu Val Xaa Arg Leu Ile Gln
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1875 1880 1885

Pro Cys Pro Met Ala Xaa Arg Val Gly Leu Leu Leu Arg Pro Xaa Thr
1890 1895 1900

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1905 1910 1915 1920

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Tyr Asn Tyr Gly Pro Ala Gly Lys Thr Ile Gly Ser Asp Leu Leu Asn
1940 1945 1950

Asn Pro Asp Leu Val Ala Thr Asp Pro Thr Ile Ser Phe Lys Thr Ala
1955 1960 1965

Leu Trp Phe Trp Met Thr Pro Gln Ser Pro Lys Pro Ser Cys His Asp
1970 1975 1980

Val Ile Thr Gly Ser Trp Thr Pro Ser Asn Ala Asp Arg Ala Ala Gly
1985 1990 1995 2000

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2005 2010 2015

Glu Cys Gly Lys Gly Ser Asp Ala Arg Val Ala Asp Arg Ile Gly Phe
2020 2025 2030

Tyr Xaa Arg Tyr Cys Asp Leu Leu Gly Val Ser Tyr Gly Asp Asn Leu
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2065 2070 2075 2080

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2085 2090 2095

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2100 2105 2110

Ser Xaa Cys Val Phe Xaa Arg Ile Glu Asp Val Arg Ile Asn Lys Ile
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2275 2280 2285

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gaattagtgc agtggattaa aacttataag tttaaaaatg aattcgtaaa tacgagaaga 660

tttcgtttta atagtaactt gagtagatga aaaccaaaag ttaacagtag tgtaaataac 720

aatttcggga aagtaagaac tcacacattc aaggaacata ccaatttaaa gtggttcggt 780

caaaatgacc tacatccact tgtgaagcct tcttcgaaga ggctcccaac ttccactagc 840

aaatcacttt gaaggggaag gacaaatacc tctcttacna ccttttacaa tggttcatac 900

tcttacaaat tttcaacgag aaagaaggag gtgaacatgc aagcaattga aaacaagact 960

tgctaaagac tttgctaagg ctttttttct caatctattg cttctcaaaa gttgtattct 1020

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Lys Val Arg Lys Ser Ala Glu Tyr Phe Trp Ile Leu Ser Leu Gly Trp
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Cys Leu His Glu Pro Gln Glu Ser Ser Lys Tyr Gln Lys Pro Asn His
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Lys Leu Lys Cys Asp Ile His Phe Cys Leu Met His Lys Thr Gly His
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Ser Pro Thr Phe Ser Tyr Ile Thr Met Ser His Gly Phe Val Asp Asp
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Arg Pro Pro Gln Ala Cys Leu Trp Leu Cys Leu Thr Glu Arg Glu Arg
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Gln Thr Asp Ser Leu Leu Ile His Tyr Gly Asp Pro Ile Ala Ser Phe
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Ala Ala Val Ile Cys Val Pro Asp Ala Cys Ala His Gly Lys Thr Ala
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Gly Pro Ala Gln Leu Met His Trp Arg Leu Leu Gly Thr Lys His Arg
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Arg Gly Lys Leu Ser Arg Cys Leu Cys His Arg Gln Leu Arg Ile Arg
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Glu His Arg His Pro Phe Gln Val Trp His Gly Pro Asn Ser Arg Asp
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Gln His Arg Arg Arg Glu His Arg Thr Leu Thr Cys Arg Phe Pro Gln
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Val Pro Phe Leu Pro Glu Arg Tyr Gln Ser Cys Lys Cys Val Gln Gln
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Cys Ser Gly Cys Ser Asn Trp Trp Leu His Ser Thr Pro Ser His Ile
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Thr Arg His Lys Tyr Asn Tyr Arg Pro Arg Leu Ile Leu Leu Met His
1525 1530 1535

Arg Phe Ser Leu Pro Phe Pro Leu Cys Tyr Gly Tyr Arg Cys Tyr Trp
1540 1545 1550

Leu Leu Asn Ser Trp Gly Ser Ala Trp Val Ile Arg Pro Ala Gly Arg
1555 1560 1565

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<211> 1574
<212> PRT
<213> Musa acuminata

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Leu Tyr Gln Glu Leu Val His His Pro Asn Gly Val His Val Ser Asp
20 25 30

Gly Leu Thr Trp Phe His Ser Glu Lys Phe Glu Arg Val His Lys Asn
35 40 45

Ile Asp Phe Gly Phe Phe His Ser Val Gly Ala Phe Met Ser Asp Leu
50 55 60

Lys Ser Pro Pro Asn Ile Lys Ser Arg Ile Thr Asn Asn Val Ile Glu

65 70 75 80

Phe Ile Phe Val Cys Thr Lys Gln Gly Ile His Ser Leu Cys Val Ser
85 90 95

Lys Asn Ile Leu Leu Arg Phe Ile Pro Phe Ala His Arg Lys Arg Lys
100 105 110

Phe Leu Lys Ser Ile Phe Asp Asn Arg Pro Lys Leu Glu Ile His Gly
115 120 125

Asn Glu Glu Asp Pro His Met Ser Phe Pro Ile His Val Ile Arg Leu
130 135 140

Ile Lys His Arg Trp Met Cys Asn Glu Met Thr Leu Met Xaa Tyr Leu
145 150 155 160

Ser Trp Val Leu Asn Gln Ile Glu Ala Leu Leu Tyr Gln Leu Leu Gly
165 170 175

Ser Glu Trp His Glu Arg Gly Gly Val Asn Cys Ser Gly Leu Lys Leu
180 185 190

Ile Ser Leu Lys Met Asn Ser Ile Arg Glu Asp Phe Val Leu Ile Val
195 200 205

Thr Val Asp Glu Asn Gln Lys Leu Thr Val Val Ile Thr Ile Ser Gly
210 215 220

Lys Glu Leu Thr His Ser Arg Asn Ile Pro Ile Ser Gly Ser Val Lys
225 230 235 240

Met Thr Tyr Ile His Leu Ser Leu Leu Arg Arg Gly Ser Gln Leu Pro
245 250 255

Leu Ala Asn His Phe Glu Gly Glu Gly Gln Ile Pro Leu Leu Xaa Pro
260 265 270

Phe Thr Met Val His Thr Leu Thr Asn Phe Gln Arg Glu Arg Arg Arg
275 280 285

Thr Cys Lys Gln Leu Lys Thr Arg Leu Ala Lys Asp Phe Ala Lys Ala
290 295 300

Phe Phe Leu Asn Leu Leu Leu Leu Lys Ser Cys Ile Leu Cys Glu Leu
305 310 315 320

Arg Gly Ile Tyr Arg Pro Gln Glu Asp Leu Asn Leu Gly Ser Lys Phe
325 330 335

Arg Met Leu Leu Gly Ser Arg Gly Cys Arg Cys His Arg Leu Ser Val
340 345 350

Phe Asp Thr Gly Gln Cys Thr Ser Gly Ala Thr Ala Gly Pro Leu Gly
355 360 365

Cys Trp Ala Val Pro Pro Pro Arg Leu Phe Gln Leu Thr Gly Trp Ile
370 375 380

Pro Asn Leu Thr Gln Thr Ser Pro Asn Ser Gly Pro Ile Asp Pro Pro
385 390 395 400

Asp Tyr Arg Ile Asn Pro Ser Pro Leu Tyr Ala Asn Tyr Ala Thr Glu
405 410 415

Asn Ile Val Leu Ser Lys Phe Leu Thr Gly Lys Arg Arg Val Phe Phe
420 425 430

Arg Arg Ser Phe Gly Arg Leu Leu Ile Tyr Leu Trp Ile Ser Ser Ser
435 440 445

Gly Leu Leu Val Gly Ser Arg Ser Cys Gly Glu Phe Ser Glu Pro Asn
450 455 460

Leu Leu Gly Asp Leu Arg Lys Pro Pro Met Ile Ser Ser Ala Asp Phe
465 470 475 480

Arg Lys Leu Arg Gln Val Pro Asp Phe Phe Ser Val Gly Ser Asp Ser
485 490 495

Ile Ser Asn Glu Thr Ser Asp Ser Leu Asn Val His Arg Thr Leu Arg
500 505 510

Ala Cys Phe Ile Phe Ser Gly Tyr His Ser Ser Tyr Ile Leu Asn Ser
515 520 525

Ile Ile Trp Ile Arg Leu Ile Asn Pro Ser Ile Asp Phe Ile Ile Lys
530 535 540

Ile Arg His Ser Thr Asn Ile Arg Thr Gln Pro Ile Arg Leu Leu Arg
545 550 555 560

Asp Tyr Leu Leu Ser Val Arg Glu Val Ser Glu Ser Ser Arg Ser Cys
565 570 575

His Leu Leu Ala Glu His Val Ser Leu Ile Gln Ile Gln Ser Ser Gln
580 585 590

Leu Phe Pro Thr Arg Leu Phe Phe Tyr Tyr Phe Lys Asn Ser Asn Gln
595 600 605

Asn Arg Tyr Lys Ile Thr Arg Asp Thr Val Thr Cys Ser Leu Glu Ser
610 615 620

Ile Asn Ser Arg Ile His Arg Arg Arg Gln Leu His His Pro Leu Phe
625 630 635 640

Pro Thr Pro Cys Arg Met Ala Leu Leu Met Thr Asp His His Lys Leu
645 650 655

Ala Phe Gly Cys Ala Gln Arg Glu Arg Asp Arg Pro Ile Ala Ser Ser
660 665 670

Phe Thr Met Ala Ile Arg Ser Pro Ala Ser Leu Leu Leu Phe Ala Phe
675 680 685

Leu Met Leu Ala Leu Thr Gly Arg Leu Gln Ala Arg Arg Ser Ser Cys

690 695 700

Ile Gly Val Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ala Asp
705 710 715 720

Ala Cys Ala Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe
725 730 735

Lys Phe Gly Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys
740 745 750

Asp Pro Arg Asn Asn Gly Cys Ala Arg Leu Ser Ser Glu Ile Gln Ser
755 760 765

Cys Gln Glu Arg Gly Val Lys Val Met Leu Ser Ile Gly Gly Gly Gly
770 775 780

Ser Tyr Gly Leu Ser Ser Thr Glu Asp Ala Lys Asp Val Ala Ser Tyr
785 790 795 800

Leu Trp His Ser Phe Leu Gly Gly Ser Ala Ala Arg Tyr Ser Arg Pro
805 810 815

Leu Gly Asp Ala Val Leu Asp Gly Ile Asp Phe Asn Ile Ala Gly Gly
820 825 830

Ser Thr Glu His Tyr Asp Glu Leu Ala Ala Phe Leu Lys Ala Tyr Asn
835 840 845

Glu Gln Glu Ala Gly Thr Lys Lys Val His Leu Ser Ala Arg Pro Gln
850 855 860

Cys Pro Phe Pro Asp Tyr Trp Leu Gly Asn Ala Leu Arg Thr Asp Leu
865 870 875 880

Phe Asp Phe Val Trp Val Gln Phe Phe Asn Asn Pro Ser Cys His Phe
885 890 895

Ser Gln Asn Ala Ile Asn Leu Ala Asn Ala Phe Asn Asn Trp Val Met
900 905 910

Ser Ile Pro Ala Gln Lys Leu Phe Leu Gly Leu Pro Ala Ala Pro Glu
915 920 925

Ala Ala Pro Thr Gly Gly Tyr Ile Pro Pro His Asp Leu Ile Ser Lys
930 935 940

Val Leu Pro Ile Leu Lys Asp Ser Asp Lys Tyr Ala Gly Ile Met Leu
945 950 955 960

Trp Thr Arg Tyr His Asp Arg Asn Ser Gly Tyr Ser Ser Gln Val Lys
965 970 975

Ser His Val Cys Pro Ala Arg Arg Phe Ser Asn Ile Leu Ser Met Pro
980 985 990

Val Lys Ser Ser Lys Thr Thr Ala Met Ile Gly Gly Arg Lys Leu Arg
995 1000 1005

Ser Ser Trp Val Pro Ile Arg Ile Arg Ala Leu Leu Arg Tyr Gly Val
1010 1015 1020

Ser Leu Val Cys Trp Ser Phe Gln Tyr Asn Lys Gly Leu Val Leu Arg
1025 1030 1035 1040

Phe His Ile Phe His Val Arg Lys Gln Tyr Ile Cys Cys Pro Phe Gln
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Ile Lys Arg Asn Lys Tyr Ile Thr Lys Asn Ile Leu Phe Phe Phe Ser
1060 1065 1070

Phe Asp Lys Tyr Ile Thr Leu Asn Phe Pro Asn Cys Leu Ser Lys Arg
1075 1080 1085

Tyr Lys Ser Ser Ser Thr Gln Lys Thr Asn Pro Leu Leu Asp Cys Cys
1090 1095 1100

Leu Leu Val Pro Lys Trp Arg Arg Glu Lys Leu Val Leu Pro Ala Ile
1105 1110 1115 1120

Thr Ser Ser Ser Thr Leu Ser Ser Leu Pro Cys Leu Val Thr Pro Tyr
1125 1130 1135

Ser Arg Asp Gln Asp Thr Pro Leu Glu Gln Phe Leu Gly Lys Leu Ile
1140 1145 1150

Phe Phe Ser Ala Pro Arg Arg Pro Ile Leu Gly Ser Ser Pro Glu Trp
1155 1160 1165

Cys Pro Leu Arg His Arg Arg Ser Thr Ala Xaa Ile His Ser Ser Asp
1170 1175 1180

Tyr Val Trp Val Gln Phe Tyr Tyr Thr Gly Asn Ser Gln Met Pro Gly
1185 1190 1195 1200

Asn Asn Gly Phe Ser Ile Leu His Gly Arg Cys Ser Leu Asp Phe Leu
1205 1210 1215

Leu Leu Leu Arg Leu Leu Glu Gly Ala Pro Phe His Ser Tyr Thr Cys
1220 1225 1230

Leu Ile Ile Lys Asn Tyr Ser Lys Tyr Arg Gly Ile Ile Lys Ile Lys
1235 1240 1245

Lys Lys Gly Arg Met Gly Ile Arg Ile Lys Thr Glu Thr Gly His Glu
1250 1255 1260

Glu Arg Phe Glu Arg Gln Thr Thr Val Asp Gly Ser Leu Leu Trp Thr
1265 1270 1275 1280

Trp Ile Val Pro Lys Ala Val Gln Val Phe Met Asn Arg Ser Ile Gly
1285 1290 1295

Ser Ala Phe Lys Asn Arg Glu Asp Asn Arg Pro Lys Arg Asn Asn Lys
1300 1305 1310

Leu Trp Ala Phe Xaa Ile Asn Arg Thr Val Pro Ser Val Arg Cys Met

1315 1320 1325

Asp Gly Gly Ile Ser Arg Val Asn Leu Arg Lys Ile Val Pro Ala Pro
1330 1335 1340

Leu Pro Arg Pro Thr Arg Ser Val Leu Ser Pro Thr Pro Tyr Thr Phe
1345 1350 1355 1360

Phe Phe Phe Arg Ser Cys Asp Arg Leu Phe Asp Phe Val Tyr Asp Ile
1365 1370 1375

Gln Phe Leu Phe Trp Ser Gly Ile Leu Phe Phe Leu Arg Leu Leu Tyr
1380 1385 1390

Thr Ile Ser Phe Gly Leu Ser Ala Trp Arg Arg Val Ser Gly Asp Gly
1395 1400 1405

Ser Gln Ile Pro Cys Phe Leu Leu Pro Lys Trp Cys Lys Ile Arg Pro
1410 1415 1420

Ile Gly Phe Phe Ser His Phe Lys Leu Asn Tyr Ala Val Ile Leu Val
1425 1430 1435 1440

Arg Leu Trp Arg Ile Cys Ser Ile Ser Lys Glu Ile Ala Ala Phe Phe
1445 1450 1455

Leu Val Pro Ile Lys Phe Ala Phe Gly Ser Glu Tyr Pro Arg Met Ser
1460 1465 1470

Tyr Arg Gln Arg Phe Phe Phe Arg Ile Leu Ile Leu Cys Pro Val Phe
1475 1480 1485

Cys Asp Leu Met Glu Lys Ile Leu Phe Leu Leu Val Ile Tyr Ala Leu
1490 1495 1500

Pro Thr Ile Arg Met Arg Val Glu Gly Glu Asn Thr Phe Trp Phe Ser
1505 1510 1515 1520

Ser Leu Asn Ser Ser Lys His Asp Thr Ser Ile Ile Ile Asp Gln Asp
1525 1530 1535

Phe Phe Leu Cys Thr Asp Ser His Phe Pro Ser Leu Cys Val Met Val
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Val Asp Leu Gln Val Asp
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<211> 1562
<212> PRT
<213> Musa acuminata

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Glu Thr Val Tyr Met Ser Pro Met Asp Ser Leu Gly Phe Ile Arg Lys
        35                  40                  45

Ser Ser Lys Glu Cys Ile Arg Ile Leu Ile Leu Asp Ser Phe Thr Arg
    50                  55                  60

Leu Val Pro Ser Val Thr Ser Arg Val Leu Gln Ile Ser Lys Ala Glu
65                  70                  75                  80

Ser Gln Ile Glu Met Leu Asn Ser Phe Leu Ser Asn Ala Gln Asn Arg
                85                  90                  95

Ala Phe Ile Ala Phe Val Phe Lys Ala Lys Thr Phe Phe Ser Asp Ser
            100                 105                 110

Ser His Ser Leu Ile Gly Arg Glu Asn Phe Asn Pro Phe Ser Thr Ile
        115                 120                 125

Asp Gln Ser Ser Lys Ser Met Glu Met Arg Lys Ile Leu Ile Val Phe
    130                 135                 140

Gln Tyr Met Phe Asp Ser Leu Asn Ile Gly Gly Cys Val Met Lys Pro
145                 150                 155                 160

Ser Cys Xaa Ile Ser Leu Gly Tyr Thr Lys Tyr Glu Ser Glu Pro Cys
                165                 170                 175

Ser Asp Thr Asn Cys Asp Gln Ser Gly Thr Lys Arg Gly Gly Glu Ile
            180                 185                 190

Ser Ala Val Asp Asn Leu Val Lys Ile Arg Lys Tyr Glu Lys Ile Ser
        195                 200                 205

Phe Leu Glu Met Lys Thr Lys Ser Gln Cys Lys Gln Phe Arg Glu Ser
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Lys Asn Ser His Ile Gln Gly Thr Tyr Gln Phe Lys Val Val Arg Ser
225                 230                 235                 240

Lys Pro Thr Ser Thr Cys Glu Ala Phe Phe Glu Glu Ala Pro Asn Phe
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His Gln Ile Thr Leu Lys Gly Lys Asp Lys Tyr Leu Ser Tyr Xaa Leu
            260                 265                 270

Leu Gln Trp Phe Ile Leu Leu Gln Ile Phe Asn Glu Lys Glu Gly Gly
        275                 280                 285

Glu His Ala Ser Asn Lys Gln Asp Leu Leu Lys Thr Leu Leu Arg Leu
    290                 295                 300

Phe Phe Ser Ile Tyr Cys Phe Ser Lys Val Val Phe Ser Ala Glu Asn
305                 310                 315                 320
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Gly Val Phe Ile Asp Pro Lys Arg Ile Ile Trp Ala Pro Asn Phe Glu
325 330 335

Cys Ser Trp Val Pro Glu Val Ala Gly Ala Thr Ala Cys Gln Cys Leu
340 345 350

Thr Leu Asp Ser Val Leu Ala Val Pro Pro Pro Asp Leu Ser Gly Val
355 360 365

Gly Arg Cys His Arg Leu Asp Phe Phe Ser Ser Leu Val Gly Phe Gln
370 375 380

Thr Pro Lys Pro Val Arg Thr Arg Val Gln Leu Thr Arg Asn Arg Ile
385 390 395 400

Ile Gly Leu Thr Leu Asn Pro Asn Pro Asn Tyr Met Gln Thr Thr Gln
405 410 415

Leu Lys Ile Ser Ala Ser Phe Pro Ala Asn Val Glu Ser Ser Ser Gly
420 425 430

Asp Leu Ser Ala Asp Phe Tyr Thr Phe Gly Phe Leu Leu Ala Asp Ser
435 440 445

Gly Pro Asp Leu Val Ala Ser Leu Ala Ser Ser Arg Thr Phe Ser Val
450 455 460

Ile Ser Ala Asn Arg Arg Ser Leu Arg Gln Thr Phe Glu Asn Phe Asp
465 470 475 480

Lys Ser Pro Ile Ser Ser Arg Leu Val Pro Thr Ala Ser Leu Thr Lys
485 490 495

Leu Arg Thr Pro Met Ser Ile Glu Leu Asp Ser Gly Arg Leu Ala Leu
500 505 510

Tyr Phe Gln Ala Ile Ile Val Asn Pro Thr Tyr Leu Thr Gln Tyr Gly
515 520 525

Leu Asp Leu Thr His Gln Leu Ile Ser Ser Ser Lys Phe Asp Ile Gln
530 535 540

Gln Thr Ser Val Leu Asn Asn Pro Ser Gly Tyr Ser Tyr Val Thr Ile
545 550 555 560

Tyr Cys Asp Pro Tyr Val Lys Leu Ala Ser His Asp Pro Gly Arg Val
565 570 575

Thr Tyr Trp Pro Asn Thr Tyr Pro Leu Ser Lys Ser Ser Leu Leu Asn
580 585 590

Ser Ser Ser Leu Pro Val Ser Phe Phe Ile Thr Phe Glu Arg Ile Gln
595 600 605

Ile Lys Thr Asp Thr Lys His Gly Glu Thr Leu His Ala Ser Leu Trp
610 615 620

Lys Ala Leu Ile Arg Ala Ser Thr Asp Val Val Ser Phe Ile Thr His

625 630 635 640

Phe Phe Leu His Asn His Val Ala Trp Leu Cys Gln Thr Thr Thr Ser
645 650 655

Leu Pro Leu Val Val Pro Asn Arg Glu Arg Glu Thr Asp Arg Pro Pro
660 665 670

His Ser Leu Trp Arg Ser Asp Arg Gln Leu Arg Cys Cys Tyr Leu Arg
675 680 685

Ser Cys Leu Arg Ser Arg Glu Asp Cys Arg Pro Gly Ala Ala His Ala
690 695 700

Leu Ala Ser Thr Gly Lys Thr Pro Thr Arg Glu Ala Gln Met Leu Val
705 710 715 720

Pro Gln Ala Thr Thr Asn Thr Thr Ser Pro Pro Phe Ser Ser Leu Ala
725 730 735

Trp Ala Lys Leu Gln Arg Ser Thr Ser Pro Ala Thr Val Thr Leu Gly
740 745 750

Thr Thr Ala Ala Arg Ala Ala Ala Lys Ser Ser Pro Ala Arg Ser Val
755 760 765

Ala Ser Arg Cys Ser Pro Ser Glu Val Ala Gly Leu Met Ala Val Pro
770 775 780

Pro Lys Thr Pro Arg Thr Arg His Thr Ser Gly Thr Val Ser Trp Val
785 790 795 800

Val Leu Leu Leu Ala Thr Arg Asp Pro Ser Gly Met Arg Phe Trp Met
805 810 815

Ala Thr Ser Thr Ser Pro Glu Gly Ala Gln Asn Thr Met Met Asn Leu
820 825 830

Pro Leu Ser Ser Arg Pro Thr Thr Ser Arg Arg Pro Glu Arg Arg Lys
835 840 845

Phe Thr Val Leu Val Arg Ser Val Leu Ser Arg Ile Thr Gly Leu Ala
850 855 860

Thr His Ser Glu Gln Ile Ser Ser Thr Ser Cys Gly Cys Ser Ser Ser
865 870 875 880

Thr Thr Leu Arg Ala Ile Ser Pro Arg Thr Leu Ser Ile Leu Gln Met
885 890 895

Arg Ser Thr Ile Gly Ser Cys Pro Ser Leu Arg Lys Ser Cys Ser Leu
900 905 910

Gly Phe Leu Leu Leu Leu Arg Leu Leu Gln Leu Val Ala Thr Phe His
915 920 925

Pro Met Ile Ser Tyr Leu Lys Phe Phe Arg Ser Arg Ile Pro Thr Ser
930 935 940

Thr Gln Glu Ser Cys Cys Gly Leu Asp Thr Thr Thr Glu Thr Pro Ala
945 950 955 960

Thr Val Leu Lys Ser Ser Pro Thr Cys Val Gln Arg Val Gly Ser Pro
965 970 975

Thr Ser Tyr Leu Cys Arg Ser Leu Pro Ser Lys Pro Glu Arg Arg Arg
980 985 990

Ser Val Val Glu Asn Ser Asp His His Gly Ser Pro Ser Val Ser Val
995 1000 1005

Arg Cys Tyr Val Met Val Phe Pro Leu Tyr Val Gly Leu Phe Asn Asn
1010 1015 1020

Ile Ile Arg Gly Phe Tyr Val Ser Ile Phe Ser Met Phe Glu Asn Ser
1025 1030 1035 1040

Ile Phe Ala Ala Pro Ser Lys Phe Glu Lys Asp Lys Ile Asn Ile Leu
1045 1050 1055

Lys Ile Ser Ser Phe Phe Phe Leu Ser Thr Asn Ile Leu Leu Thr Phe
1060 1065 1070

Pro Ile Val Ala Lys Asp Ile Asn Pro Leu Pro His Lys Arg Arg Ile
1075 1080 1085

His Asp Cys Trp Ile Ala Val Tyr Trp Cys Arg Asn Gly Asp Glu Arg
1090 1095 1100

Ser Leu Cys Tyr Leu Gln Leu Gln Val Arg Gln His Cys Leu Pro Cys
1105 1110 1115 1120

His Val Trp Arg His Thr Pro Val Ile Arg Thr His Leu Trp Asn Ser
1125 1130 1135

Phe Leu Gly Ser Ser Ser Ser Arg Leu Leu Gly Asp Gln Ser Cys Glu
1140 1145 1150

Val Leu Leu Leu Asn Gly Val His Phe Asp Ile Glu Gly Leu Pro Glu
1155 1160 1165

Arg Xaa Ser Thr Val Pro Thr Thr Cys Gly Cys Ser Ser Thr Thr Gln
1170 1175 1180

Ala Thr Arg Arg Cys Pro Val Thr Met Gly Ser Pro Ser Cys Met Glu
1185 1190 1195 1200

Gly Val Pro Trp Thr Ser Cys Cys Ser Ser Gly Cys Trp Lys Glu Leu
1205 1210 1215

His Ser Thr Ser Asp Leu Thr Arg Val Leu Ser Ser Arg Ile Ile Ala
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Ser Thr Glu Gly Leu Leu Lys Lys Lys Arg Glu Glu Trp Glu Leu Glu
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Leu Lys Leu Lys Pro Ala Met Lys Asn Val Ser Ser Glu Asp Lys Arg

1250 1255 1260

Gln Tyr Glu Thr Val Val Cys Tyr Gly His Gly Ser Phe Pro Lys Gln
1265 1270 1275 1280

Ser Lys Ser Leu Thr Gly Leu Ser Val Gln Pro Ser Arg Thr Ala Arg
1285 1290 1295

Ile Thr Gly Pro Arg Glu Thr Thr Asn Cys Gly Glu Leu Leu Xaa Thr
1300 1305 1310

Glu Arg Cys Arg Pro Ser Asp Val Lys Trp Thr Ala Asp Arg Ser Pro
1315 1320 1325

Glu Ile Gly Lys Ser Phe Arg Pro Pro Tyr His Asp Pro Arg Asp Pro
1330 1335 1340

Ser Ser Pro Pro Pro Pro Thr Pro Phe Ser Ser Ser Ala Pro Ala Ile
1345 1350 1355 1360

Gly Tyr Leu Ile Leu Cys Met Ile Ser Asn Phe Phe Ser Gly Val Val
1365 1370 1375

Ser Tyr Ser Asn Phe Leu Asp Cys Cys Ile Glu Pro Ser Val Leu Val
1380 1385 1390

Ala His Asp Gly Gly Glu Phe Arg Glu Met Gly Val Arg Ser Leu Val
1395 1400 1405

Phe Cys Cys Arg Ser Gly Ala Arg Phe Gly Arg Val Phe Ser Leu Ile
1410 1415 1420

Leu Ser Ser Ile Met Arg Ser Phe Leu Leu Gly Phe Gly Glu Phe Ala
1425 1430 1435 1440

Leu Phe Arg Lys Lys Leu Leu Leu Ser Ser Phe Asp Ser Leu Asn Leu
1445 1450 1455

Leu Ser Val Leu Asn Ile Arg Glu Cys Arg Ile Val Asn Asp Asp Ser
1460 1465 1470

Phe Leu Glu Phe Tyr Phe Val Leu Phe Ser Val Ile Trp Arg Lys Tyr
1475 1480 1485

Cys Ser Phe Ser Met Leu Ser Arg Pro Leu Gly Gly Leu Lys Val Lys
1490 1495 1500

Ile Leu Ser Gly Asn Phe Pro Leu Ile Leu Pro Asn Thr Thr Gln Val
1505 1510 1515 1520

Leu Thr Lys Ile Asp Ser Ser Tyr Ala Pro Ile Leu Thr Ser Leu Pro
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Leu Gly Asp Pro Leu Thr Cys Arg Ser Thr
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<211> 2392
<212> DNA
<213> Musa acuminata

<220>
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<222> (1720)..(1721)
<223> Nucleotide 1721 is n wherein n = a or g or c or t/u.

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gctgaattgc tatgtttatc ttggccaaac tgtgtccatc tttgagcaga taaatctggc 180

gataatgttc tttttactga aagcactgca ggatgagggc ctgaaatcac atcggacgcc 240

cactgggtca tgatgatatg gactcctcca cagcgagcag ccatgggatg tgagatccac 300

atagcagcgt agataaggga agcccgcaac actaggctgt tgttgttcca gtaaagatcg 360

aaaggtcagg cgacagtgac gatcgacttt ttcgagcatg atgacaacga cgacctgctc 420

ctgcaatatc cgtcccctac cgtagagtgg gaataaatgg gtttgtagtt gcactatttc 480

tcgcaggaat taattgaaag ccctgcaaat tgctgtttct ctttccttat attaaacctt 540

cctcctgtta cattaaaatt gcatgttaag acatttctgt atggatccga acatgagatc 600

tatcattgaa gtaatgggta ggatttacat tatcatcatc atcatcatct ccatgggttt 660

ggatctaatt agaccgaaaa cctcatttaa aatccaaccc caatattggc ttgacttgct 720

ccatctccaa gaaaaataca acaagaacaa caaaaattta ggatgcacat tgaattgatt 780

tggtcactat gagagaatca tggattaaaa atattaaaat aaaaaataaa tcataatcat 840

ctactcactc taacgattca cattctatcc accaaatttg acatcggctt ctaattaatt 900

tcatatatta ggttctaaaa aatctctccc tttgacagat gaataaatat ttcttttaat 960

tcgttaggga aggatctaat ataatatata tatatatata tatttattta ttagattcta 1020

accatttctc tcaccagaat atgaatcgac ggccatatct gcaaaaaccc accaattgtt 1080

cacagtaaac gctcattgaa ttaaggtcga aattactttt aaatttctag agatttccaa 1140

taaaatatac tcgtatcttt tacagtgatg atgctccgga tgataagatg gaaggatgcg 1200

tgtgtcagcc gcctgcgatc tctgtggcgg ggacgagacg aagacaagga cgtgagcgga 1260

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tccttcctcg tctaaccatg tcgacctgcg gcaactgcga ctgcgttgac aagagccagt 1560

gcgtgtaagt catcctccat ccctccacct cttcttcttc ttcttcttct tcttcttcta 1620

acctcgcccc gtttgtgttt gatgagtcga ctcttcccac atcgctcgtc aaaactcaga 1680

gctttattag ggaacatcag caatactata tgtatatgta naaggtcaac gttggctgaa 1740

gaacttggtt ttgcctttgc aggaagaaag gaaacagcta cggtatcgat attgttgaga 1800

ccgagaagag gtactgatta gcttcttctc cctcctcctc gtcgaggatg atcaaactaa 1860

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cggcgccgcc tgcgcctgca ccgactgcaa gtgtggcaac tgagaagcac ttgtgtcact 2040

accactaaat aaaagtttgc aatgcataaa aaacaaaaga acaaaaaaaa aaaaggaaga 2100

agaagaaggt gtggctatgt actctaataa ttcgggcagg ctgataggtt gtaagatggg 2160

ataacgcagt atcatctgtg ttatctctgt cctgtgttac aactctccta tctatcctag 2220

tcaatgaaat attattagta ttaatctggt tgtgtcattc atatatgctg ctgctgctgc 2280

tgcttcctct ttcaccaatc aacccaaagg atcgattgca ctgtaaggcc caacttcctc 2340

accgatatgc tcgctcagtt acgatgaatg aacagcaacc aaacgagtct gc 2392

<210> 33
<211> 2392
<212> DNA
<213> Musa acuminata

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<223> Nucleotide 1721 is n wherein n = a or g or c or t/u.

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cgacttaacg atacaaatag aaccggtttg acacaggtag aaactcgtct atttagaccg 180

ctattacaag aaaaatgact ttcgtgacgt cctactcccg gactttagtg tagcctgcgg 240

gtgacccagt actactatac ctgaggaggt gtcgctcgtc ggtaccctac actctaggtg 300

tatcgtcgca tctattccct tcgggcgttg tgatccgaca acaacaaggt catttctagc 360

tttccagtcc gctgtcactg ctagctgaaa aagctcgtac tactgttgct gctggacgag 420

gacgttatag gcaggggatg gcatctcacc cttatttacc caaacatcaa cgtgataaag 480

agcgtcctta attaactttc gggacgttta acgacaaaga gaaaggaata taatttggaa 540

ggaggacaat gtaattttaa cgtacaattc tgtaaagaca tacctaggct tgtactctag 600

atagtaactt cattacccat cctaaatgta atagtagtag tagtagtaga ggtacccaaa 660

cctagattaa tctggctttt ggagtaaatt ttaggttggg gttataaccg aactgaacga 720

ggtagaggtt ctttttatgt tgttcttgtt gtttttaaat cctacgtgta acttaactaa 780

accagtgata ctctcttagt acctaatttt tataatttta ttttttattt agtattagta 840

gatgagtgag attgctaagt gtaagatagg tggtttaaac tgtagccgaa gattaattaa 900

agtatataat ccaagatttt ttagagaggg aaactgtcta cttatttata aagaaaatta 960

agcaatccct tcctagatta tattatatat atatatatat ataaataaat aatctaagat 1020

tggtaaagag agtggtctta tacttagctg ccggtataga cgtttttggg tggttaacag 1080

gtgtcatttg cgagtaactt aattccagct ttaatgaaaa tttaaagatc tctaaaggtt 1140

attttatatg agcatagaaa atgtcactac tacgaggcct actattctac cttcctacgc 1200

acacagtcgg cggacgctag agacaccgcc cctgctctgc ttctgttcct gcactcgcct 1260

gctatggttc agaagaggag ggggtggtgc gtgcagagtc taagggctat gccggatagg 1320

gccaccgcac acctgacgtg tctgcttgct catttacggg taggggggag aaagtaagaa 1380

agagaaacgc acacactctc ctcgcggata tttattcgtg ctttgttcgg ggaaaagaga 1440

ggttcttgtg tggtgtggta agtgtgtgat gtaggagacg aagaagctcg gaaaagcgga 1500

aggaaggagc agattggtac agctggacgc cgttgacgct gacgcaactg ttctcggtca 1560

cgcacattca gtaggaggta gggaggtgga gaagaagaag aagaagaaga agaagaagat 1620

tggagcgggg caaacacaaa ctactcagct gagaagggtg tagcgagcag ttttgagtct 1680

cgaaataatc ccttgtagtc gttatgatat acatatacat nttccagttg caaccgactt 1740

cttgaaccaa aacggaaacg tccttctttc ctttgtcgat gccatagcta taacaactct 1800

ggctcttctc catgactaat cgaagaagag ggaggaggag cagctcctac tagtttgatt 1860

aatcctaatg tggaataatg gaatggatta cgaaaaaggc ataagcaaag cagagaagtc 1920

gatgcagctg ctccactagc aacggcgtct tcgacggctc gtactgccgt tcacgttcac 1980

gccgcggcgg acgcggacgt ggctgacgtt cacaccgttg actcttcgtg aacacagtga 2040

tggtgattta ttttcaaacg ttacgtattt tttgttttct tgtttttttt ttttccttct 2100

tcttcttcca caccgataca tgagattatt aagcccgtcc gactatccaa cattctaccc 2160

tattgcgtca tagtagacac aatagagaca ggacacaatg ttgagaggat agataggatc 2220

agttacttta taataatcat aattagacca acacagtaag tatatacgac gacgacgacg 2280

acgaaggaga aagtggttag ttgggtttcc tagctaacgt gacattccgg gttgaaggag 2340

tggctatacg agcgagtcaa tgctacttac ttgtcgttgg tttgctcaga cg 2392

<210> 34
<211> 758
<212> PRT
<213> Musa acuminata

<400> 34

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Ser Leu Val Arg Gly Pro Pro Arg Gly Arg Arg Tyr Arg Ala Leu Ile
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Ser Ser Leu Asn Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Tyr
             20                  25                  30

Val Phe Lys Tyr Gly Cys Asn Ala Glu Leu Leu Cys Leu Ser Trp Pro
         35                  40                  45

Asn Cys Val His Leu Ala Asp Lys Ser Gly Asp Asn Val Leu Phe Thr
     50                  55                  60

Glu Ser Thr Ala Gly Gly Pro Glu Ile Thr Ser Asp Ala His Trp Val
 65                  70                  75                  80

Met Met Ile Trp Thr Pro Pro Gln Arg Ala Ala Met Gly Cys Glu Ile
                 85                  90                  95

His Ile Ala Ala Ile Arg Glu Ala Arg Asn Thr Arg Leu Leu Leu Phe
            100                 105                 110

Gln Arg Ser Lys Gly Gln Ala Thr Val Thr Ile Asp Phe Phe Glu His
        115                 120                 125

Asp Asp Asn Asp Asp Leu Leu Leu Gln Tyr Pro Ser Pro Thr Val Glu
    130                 135                 140

Trp Glu Met Gly Leu Leu His Tyr Phe Ser Gln Glu Leu Ile Glu Ser
145                 150                 155                 160

Pro Ala Asn Cys Cys Phe Ser Phe Leu Ile Leu Asn Leu Pro Pro Val
                165                 170                 175

Thr Leu Lys Leu His Val Lys Thr Phe Leu Tyr Gly Ser Glu His Glu
            180                 185                 190

Ile Tyr His Ser Asn Gly Asp Leu His Tyr His His His His His Leu
        195                 200                 205

His Gly Phe Gly Ser Asn Thr Glu Asn Leu Ile Asn Pro Thr Pro Ile
    210                 215                 220
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Leu Ala Leu Ala Pro Ser Pro Arg Lys Ile Gln Gln Glu Gln Gln Lys
225 230 235 240

Phe Arg Met His Ile Glu Leu Ile Trp Ser Leu Glu Asn His Gly Leu
245 250 255

Lys Ile Leu Lys Ile Asn His Asn His Leu Leu Thr Leu Thr Ile His
260 265 270

Ile Leu Ser Thr Lys Phe Asp Ile Gly Phe Leu Ile Ser Tyr Ile Arg
275 280 285

Phe Lys Ile Ser Pro Phe Asp Arg Ile Asn Ile Ser Phe Asn Ser Leu
290 295 300

Gly Lys Asp Leu Ile Tyr Ile Tyr Ile Tyr Ile Phe Ile Tyr Ile Leu
305 310 315 320

Thr Ile Ser Leu Thr Arg Ile Ile Asp Gly His Ile Cys Lys Asn Pro
325 330 335

Pro Ile Val His Ser Lys Arg Ser Leu Asn Gly Arg Asn Tyr Phe Ile
340 345 350

Ser Arg Asp Phe Gln Asn Ile Leu Val Ser Phe Thr Val Met Met Leu
355 360 365

Arg Met Ile Arg Trp Lys Asp Ala Cys Val Ser Arg Leu Arg Ser Leu
370 375 380

Trp Arg Gly Arg Asp Glu Asp Lys Asp Val Ser Gly Arg Tyr Gln Val
385 390 395 400

Phe Ser Ser Pro Thr Thr His Val Ser Asp Ser Arg Tyr Gly Leu Ser
405 410 415

Arg Trp Arg Val Asp Cys Thr Asp Glu Arg Val Asn Ala His Pro Pro
420 425 430

Ser Phe Ile Leu Ser Leu Cys Val Cys Glu Arg Ser Ala Tyr Lys Ala
435 440 445

Arg Asn Lys Pro Leu Phe Ser Pro Arg Thr His His Thr Ile His Thr
450 455 460

Leu His Pro Leu Leu Leu Arg Ala Phe Ser Pro Ser Phe Leu Val Pro
465 470 475 480

Cys Arg Pro Ala Ala Thr Ala Thr Ala Leu Thr Arg Ala Ser Ala Cys
485 490 495

Lys Ser Ser Ser Ile Pro Pro Pro Leu Leu Leu Leu Leu Leu Leu Leu
500 505 510

Leu Leu Thr Ser Pro Arg Leu Cys Leu Met Ser Arg Leu Phe Pro His
515 520 525

Arg Ser Ser Lys Leu Arg Ala Leu Leu Gly Asn Ile Ser Asn Thr Ile

530 535 540

Cys Ile Cys Xaa Arg Ser Thr Leu Ala Glu Glu Leu Gly Phe Ala Phe
545 550 555 560

Ala Gly Arg Lys Glu Thr Ala Thr Val Ser Ile Leu Leu Arg Pro Arg
565 570 575

Arg Gly Thr Asp Leu Leu Leu Pro Pro Pro Arg Arg Gly Ser Asn Leu
580 585 590

Gly Leu His Leu Ile Thr Leu Pro Asn Ala Phe Ser Val Phe Val Ser
595 600 605

Ser Leu Gln Leu Arg Arg Arg Gly Asp Arg Cys Arg Arg Ser Cys Arg
610 615 620

Ala Arg Gln Val Gln Val Arg Arg Arg Leu Arg Leu His Arg Leu Gln
625 630 635 640

Val Trp Gln Leu Arg Ser Thr Cys Val Thr Thr Thr Lys Lys Phe Ala
645 650 655

Met His Lys Lys Gln Lys Asn Lys Lys Lys Lys Gly Arg Arg Arg Arg
660 665 670

Cys Tyr Val Leu Phe Gly Gln Ala Asp Arg Leu Asp Gly Ile Thr Gln
675 680 685

Tyr His Leu Cys Tyr Leu Cys Pro Val Leu Gln Leu Ser Tyr Leu Ser
690 695 700

Ser Met Lys Tyr Tyr Tyr Ser Gly Cys Val Ile His Ile Cys Cys Cys
705 710 715 720

Cys Cys Cys Phe Leu Phe His Gln Ser Thr Gln Arg Ile Asp Cys Thr
725 730 735

Val Arg Pro Asn Phe Leu Thr Asp Met Leu Ala Gln Leu Arg Met Asn
740 745 750

Ser Asn Gln Thr Ser Leu
755

<210> 35
<211> 758
<212> PRT
<213> Musa acuminata

<400> 35
His Trp Tyr Gly Ala Pro Leu Glu Val Asp Gly Ile Asp Lys Leu Ser
1 5 10 15

Leu Leu Ser Ile Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Cys Met
20 25 30

Ser Leu Asn Met Val Val Met Leu Asn Cys Tyr Val Tyr Leu Gly Gln

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          35                  40                  45

Thr Val Ser Ile Phe Glu Gln Ile Asn Leu Ala Ile Met Phe Phe Leu
     50                  55                  60

Leu Lys Ala Leu Gln Asp Glu Gly Leu Lys Ser His Arg Thr Pro Thr
 65                  70                  75                  80

Gly Ser Tyr Gly Leu Leu His Ser Glu Gln Pro Trp Asp Val Arg Ser
                 85                  90                  95

Thr Gln Arg Arg Gly Lys Pro Ala Thr Leu Gly Cys Cys Cys Ser Ser
            100                 105                 110

Lys Asp Arg Lys Val Arg Arg Gln Arg Ser Thr Phe Ser Ser Met Met
        115                 120                 125

Thr Thr Thr Thr Cys Ser Cys Asn Ile Arg Pro Leu Pro Ser Gly Asn
    130                 135                 140

Lys Trp Val Cys Ser Cys Thr Ile Ser Arg Arg Asn Leu Lys Ala Leu
145                 150                 155                 160

Gln Ile Ala Val Ser Leu Ser Leu Tyr Thr Phe Leu Leu Leu His Asn
                165                 170                 175

Cys Met Leu Arg His Phe Cys Met Asp Pro Asn Met Arg Ser Ile Ile
            180                 185                 190

Glu Val Met Gly Arg Ile Tyr Ile Ile Ile Ile Ile Ile Ile Ser Met
        195                 200                 205

Gly Leu Asp Leu Ile Arg Pro Lys Thr Ser Phe Lys Ile Gln Pro Gln
    210                 215                 220

Tyr Trp Leu Asp Leu Leu His Leu Gln Glu Lys Tyr Asn Lys Asn Asn
225                 230                 235                 240

Lys Asn Leu Gly Cys Thr Leu Asn Phe Gly His Tyr Glu Arg Ile Met
                245                 250                 255

Asp Lys Tyr Asn Lys Lys Ile Ile Ile Ile Tyr Ser Leu Arg Phe Thr
            260                 265                 270

Phe Tyr Pro Pro Asn Leu Thr Ser Ala Ser Asn Phe His Ile Leu Gly
        275                 280                 285

Ser Lys Lys Ser Leu Pro Leu Thr Asp Glu Ile Phe Leu Leu Ile Arg
    290                 295                 300

Gly Arg Ile Tyr Asn Ile Tyr Ile Tyr Ile Tyr Leu Phe Ile Arg Phe
305                 310                 315                 320

Pro Phe Leu Ser Pro Glu Tyr Glu Ser Thr Ala Ile Ser Ala Lys Thr
                325                 330                 335

His Gln Leu Phe Thr Val Asn Ala His Ile Lys Val Glu Ile Thr Phe
            340                 345                 350
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Lys Phe Leu Glu Ile Ser Asn Lys Ile Tyr Ser Tyr Leu Leu Gln Cys
355 360 365

Ser Gly Asp Gly Arg Met Arg Val Ser Ala Ala Cys Asp Leu Cys Gly
370 375 380

Gly Asp Glu Thr Lys Thr Arg Thr Ala Asp Asp Thr Lys Ser Ser Pro
385 390 395 400

Pro Pro Pro Arg Thr Ser Gln Ile Pro Asp Thr Ala Tyr Pro Gly Gly
405 410 415

Val Trp Thr Ala Gln Thr Asn Glu Met Pro Ile Pro Pro Leu Ser Phe
420 425 430

Phe Leu Phe Ala Cys Val Arg Gly Ala Pro Ile Asn Lys His Glu Thr
435 440 445

Ser Pro Phe Ser Leu Gln Glu His Thr Thr Pro Phe Thr His Tyr Ile
450 455 460

Leu Cys Phe Phe Glu Pro Phe Arg Leu Pro Ser Ser Ser Asn His Val
465 470 475 480

Asp Leu Arg Gln Leu Arg Leu Arg Gln Glu Pro Val Arg Val Ser His
485 490 495

Pro Pro Ser Leu His Leu Phe Phe Phe Phe Phe Phe Phe Phe Pro Arg
500 505 510

Pro Val Cys Val Val Asp Ser Ser His Ile Ala Arg Gln Asn Ser Glu
515 520 525

Leu Tyr Gly Thr Ser Ala Ile Leu Tyr Val Tyr Val Xaa Gly Gln Arg
530 535 540

Trp Leu Lys Asn Leu Val Leu Pro Leu Gln Glu Glu Arg Lys Gln Leu
545 550 555 560

Arg Tyr Arg Tyr Cys Asp Arg Glu Glu Val Leu Ile Ser Phe Phe Ser
565 570 575

Leu Leu Leu Val Glu Asp Asp Gln Thr Asn Asp Tyr Thr Leu Leu Pro
580 585 590

Tyr Leu Met Leu Phe Pro Val Ser Phe Arg Leu Phe Ser Tyr Val Asp
595 600 605

Glu Val Ile Val Ala Ala Glu Ala Ala Glu His Asp Gly Lys Cys Lys
610 615 620

Cys Gly Ala Ala Cys Ala Cys Thr Asp Cys Lys Cys Gly Asn Glu Ala
625 630 635 640

Leu Val Ser Leu Pro Leu Asn Asn Lys Ser Leu Gln Cys Ile Lys Asn
645 650 655

Lys Arg Thr Lys Lys Lys Lys Glu Glu Glu Glu Gly Val Ala Met Tyr

660 665 670

Ser Asn Asn Ser Gly Arg Leu Ile Gly Cys Lys Met Gly Arg Ser Ile
675 680 685

Ile Cys Val Ile Ser Val Leu Cys Tyr Asn Ser Pro Ile Tyr Pro Ser
690 695 700

Gln Asn Ile Ile Ser Ile Asn Leu Val Val Ser Phe Ile Tyr Ala Ala
705 710 715 720

Ala Ala Ala Ala Ser Ser Phe Thr Asn Gln Pro Lys Gly Ser Ile Ala
725 730 735

Leu Gly Pro Thr Ser Ser Pro Ile Cys Ser Leu Ser Tyr Asp Glu Thr
740 745 750

Ala Thr Lys Arg Val Cys
755

<210> 36
<211> 762
<212> PRT
<213> Musa acuminata

<400> 36
Leu Thr Gly Thr Gly Pro Pro Ser Arg Ser Thr Val Ser Ile Ser Phe
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Asp Leu Phe Ser Gln Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser
20 25 30

Val Cys Leu Ile Trp Leu Cys Ile Ala Met Phe Ile Leu Ala Lys Leu
35 40 45

Cys Pro Ser Leu Ser Arg Ile Trp Arg Cys Ser Phe Tyr Lys His Cys
50 55 60

Arg Met Arg Ala Asn His Ile Gly Arg Pro Leu Gly His Asp Asp Met
65 70 75 80

Asp Ser Ser Thr Ala Ser Ser His Gly Met Asp Pro His Ser Ser Val
85 90 95

Asp Lys Gly Ser Pro Gln His Ala Val Val Val Pro Val Lys Ile Glu
100 105 110

Arg Ser Gly Asp Ser Asp Asp Arg Leu Phe Arg Ala Gln Arg Arg Pro
115 120 125

Ala Pro Ala Ile Ser Val Pro Tyr Arg Arg Val Gly Ile Asn Gly Phe
130 135 140

Val Val Ala Leu Phe Leu Ala Gly Ile Asn Lys Pro Cys Lys Leu Leu
145 150 155 160

Phe Leu Phe Pro Tyr Ile Lys Pro Ser Ser Cys Tyr Ile Lys Ile Ala

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                165                 170                 175

Cys Asp Ile Ser Val Trp Ile Arg Thr Asp Leu Ser Leu Lys Trp Val
            180                 185                 190

Gly Phe Thr Leu Ser Ser Ser Ser Ser Ser Pro Trp Val Trp Ile Leu
        195                 200                 205

Asp Arg Lys Pro His Leu Lys Ser Asn Pro Asn Ile Gly Leu Thr Cys
    210                 215                 220

Ser Ile Ser Lys Lys Asn Thr Thr Arg Thr Thr Lys Ile Asp Ala His
225                 230                 235                 240

Ile Asp Leu Val Thr Met Arg Glu Ser Trp Ile Lys Asn Ile Lys Ile
                245                 250                 255

Lys Asn Lys Ser Ser Ser Thr His Ser Asn Asp Ser His Ser Ile His
            260                 265                 270

Gln Ile His Arg Leu Leu Ile Asn Phe Ile Tyr Val Leu Lys Asn Leu
        275                 280                 285

Ser Leu Gln Met Asn Lys Tyr Phe Phe Phe Val Arg Glu Gly Ser Asn
    290                 295                 300

Ile Ile Tyr Ile Tyr Ile Tyr Ile Tyr Leu Leu Asp Ser Asn His Phe
305                 310                 315                 320

Ser His Gln Asn Met Asn Arg Arg Pro Tyr Leu Gln Lys Pro Thr Asn
                325                 330                 335

Cys Ser Gln Thr Leu Ile Glu Leu Arg Ser Lys Leu Leu Leu Asn Phe
            340                 345                 350

Arg Phe Pro Ile Lys Tyr Thr Arg Ile Phe Tyr Ser Asp Asp Ala Pro
        355                 360                 365

Asp Asp Lys Met Glu Gly Cys Val Cys Gln Pro Pro Ala Ile Ser Val
    370                 375                 380

Ala Gly Thr Arg Arg Arg Gln Gly Arg Glu Arg Thr Ile Pro Ser Leu
385                 390                 395                 400

Leu Leu Pro His His Ala Arg Leu Arg Phe Pro Ile Arg Pro Ile Pro
                405                 410                 415

Val Ala Cys Gly Leu His Arg Arg Thr Ser Lys Cys Pro Ser Pro Leu
            420                 425                 430

Phe His Ser Phe Ser Leu Arg Val Glu Glu Arg Leu Ile Ser Thr Lys
        435                 440                 445

Gln Ala Pro Phe Leu Ser Lys Asn Thr Pro His His Ser His Thr Thr
    450                 455                 460

Ser Ser Ala Ser Ser Ser Leu Phe Ala Phe Leu Pro Arg Leu Thr Met
465                 470                 475                 480
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Ser Thr Cys Gly Asn Cys Asp Cys Val Asp Lys Ser Gln Cys Val Val
485 490 495

Ile Leu His Pro Ser Thr Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser
500 505 510

Asn Leu Ala Pro Phe Val Phe Asp Glu Ser Thr Leu Pro Thr Ser Leu
515 520 525

Val Lys Thr Gln Ser Phe Ile Arg Glu His Gln Gln Tyr Tyr Met Tyr
530 535 540

Met Xaa Lys Val Asn Val Gly Arg Thr Trp Phe Cys Leu Cys Arg Lys
545 550 555 560

Lys Gly Asn Ser Tyr Gly Ile Asp Ile Val Glu Thr Glu Lys Arg Tyr
565 570 575

Leu Ala Ser Ser Pro Ser Ser Ser Ser Arg Met Ile Lys Leu Ile Arg
580 585 590

Ile Thr Pro Tyr Tyr Leu Thr Cys Phe Phe Arg Ile Arg Phe Val Ser
595 600 605

Ser Ala Thr Ser Thr Arg Ser Leu Pro Gln Lys Leu Pro Ser Met Thr
610 615 620

Ala Ser Ala Ser Ala Ala Pro Pro Ala Pro Ala Pro Thr Ala Ser Val
625 630 635 640

Ala Thr Glu Lys His Leu Cys His Tyr His Ile Lys Val Cys Asn Ala
645 650 655

Lys Thr Lys Glu Gln Lys Lys Lys Arg Lys Lys Lys Lys Val Trp Leu
660 665 670

Cys Thr Leu Ile Ile Arg Ala Gly Val Val Arg Trp Asp Asn Ala Val
675 680 685

Ser Ser Val Leu Ser Leu Ser Cys Val Thr Thr Leu Leu Ser Ile Leu
690 695 700

Val Asn Glu Ile Leu Leu Val Leu Ile Trp Leu Cys His Ser Tyr Met
705 710 715 720

Leu Leu Leu Leu Leu Leu Pro Leu Ser Pro Ile Asn Pro Lys Asp Arg
725 730 735

Leu His Cys Lys Ala Gln Leu Pro His Arg Tyr Ala Arg Ser Val Thr
740 745 750

Met Asn Glu Gln Gln Pro Asn Glu Ser Ala
755 760

<210> 37
<211> 1880
<212> DNA

<213> Musa acuminata

<220>
<221> misc_feature
<222> (1721)..(1799)
<223> Nucleotides 1721, 1782, 1788 and 1799 are n
wherein n = a or g or c or t/u.

<400> 37
tcactggtac ggggcccccc tcgaggtcga cggtatcgat aagctttgat ctcttctctc 60

aatctctctc tctctctctc tctctctctc tctctgtatg tctttaaata tggttgtaat 120

gctgaattgc tatgtttatc ttggccaaac tgtgtccatc tttgagcaga taaatctggc 180

gataatgttc tttttactga aagcactgca ggatgagggc ctgaaatcac atcggacgcc 240

cactgggtca tgatgatatg gactcctcca cagcgagcag ccatgggatg tgagatccac 300

atagcagcgt agataaggga agcccgcaac actaggctgt tgttgttcca gtaaagatcg 360

aaaggtcagg cgacagtgac gatcgacttt ttcgagcatg atgacaacga cgacctgctc 420

ctgcaatatc cgtcccctac cgtagagtgg gaataaatgg gtttgtagtt gcactatttc 480

tcgcaggaat taattgaaag ccctgcaaat tgctgtttct ctttccttat attaaacctt 540

cctcctgtta cattaaaatt gcatgttaag acatttctgt atggatccga acatgagatc 600

tatcattgaa gtaatgggta ggatttacat tatcatcatc atcatcatct ccatgggttt 660

ggatctaatt agaccgaaaa cctcatttaa aatccaaccc caatattggc ttgacttgct 720

ccatctccaa gaaaaataca acaagaacaa caaaaattta ggatgcacat tgaattgatt 780

tggtcactat gagagaatca tggattaaaa atattaaaat aaaaaataaa tcataatcat 840

ctactcactc taacgattca cattctatcc accaaatttg acatcggctt ctaattaatt 900

tcatatatta ggttctaaaa aatctctccc tttgacagat gaataaatat ttcttttaat 960

tcgttaggga aggatctaat ataatatata tatatatata tatttattta ttagattcta 1020

accatttctc tcaccagaat atgaatcgac ggccatatct gcaaaaaccc accaattgtt 1080

cacagtaaac gctcattgaa ttaaggtcga aattactttt aaatttctag agatttccaa 1140

taaaatatac tcgtatcttt tacagtgatg atgctccgga tgataagatg gaaggatgcg 1200

tgtgtcagcc gcctgcgatc tctgtggcgg ggacgagacg aagacaagga cgtgagcgga 1260

cgataccaag tcttctcctc ccccaccacg cacgtctcag attcccgata cggcctatcc 1320

cggtggcgtg tggactgcac agacgaacga gtaaatgccc atccccccctc tttcattctt 1380

tctctttgcg tgtgtgagag gagcgcctat aaataagcac gaaacaagcc ccttttctct 1440

ccaagaacac accacaccat tcacacacta catcctctgc ttcttcgagc cttttcgcct 1500

tccttcctcg tctaaccatg tcgacctgcg gcaactgcga ctgcgttgac aagagccagt 1560

gcgtgtaagt catcctccat ccctccacct cttcttcttc ttcttcttct tcttcttcta 1620

acctcgcccc gtttgtgttt gatgagtcga ctcttcccac atcgctcgtc aaaactcaga 1680

gctttattag ggaacatcag caatactata tgtatatgta naaggtcaac gttggctgaa 1740

gaacttggtt ttgcctttgc aggaagaaag gaaacagcta cngtatcnat attgttgana 1800

ccgagaagag gtactgatta gcttcttctc cctcctcctc gtcgaggatg atcaaactaa 1860

ttaggattac accttattac 1880

<210> 38
<211> 1878
<212> DNA
<213> Musa acuminata

<220>
<221> misc_feature
<222> (1720)..(1869)
<223> Nucleotides 1720, 1768, 1781, 1787, 1798, 1807,
1820, 1845 and 1869 are n wherein n = a or g or c
or t/u.

<400> 38
agtgaccatg ccccgggggg agctccagct gccatagcta ttcgaaacta gagaagagag 60

ttagagagag agagagagag agagagagag agagacatac tgaaatttat accaacatta 120

cgacttaacg atacaaatag aaccggtttg acacaggtag aaactcgtct atttagaccg 180

ctattacaag aaaaatgact ttcgtgacgt cctactcccg gactttagtg tagcctgcgg 240

gtgacccagt actactatac ctgaggaggt gtcgctcgtc ggtaccctac actctaggtg 300

tatcgtcgca tctattccct tcgggcgttg tgatccgaca acaacaaggt catttctagc 360

tttccagtcc gctgtcactg ctagctgaaa aagctcgtac tactgttgct gctggacgag 420

gacgttatag gcaggggatg gcatctcacc cttatttacc caaacatcaa cgtgataaag 480

agcgtcctta attaactttc gggacgttta acgacaaaga gaaaggaata taatttggaa 540

ggaggacaat gtaattttaa cgtacaattc tgtaaagaca tacctaggct tgtactctag 600

atagtaactt cattacccat cctaaatgta atagtagtag tagtagtaga ggtacccaaa 660

cctagattaa tctggctttt ggagtaaatt ttaggttggg ttataaccga actgaacgag 720

gtagaggttc tttttatgtt gttcttgttg tttttaaatc ctacgtgtaa cttaactaaa 780

ccagtgatac tctcttagtg cctaattttt ataattttat tttttattta gtattagtag 840

atgagtgaga ttgctaagtg taagataggt ggtttaaact gtagccgaag attaattaaa 900

gtatataatc caagattttt tagagaggga aactgtctac ttatttataa agaaaattaa 960

gcaatccctt cctagattat attatatata tatatatata taaataaata atctaagatt 1020

ggtaaagaga gtggtcttat acttagctgc cggtatagac gtttttgggt ggttaacaag 1080

tgtcatttgc gagtaactta tctccagctt taatgaaaat ttaaagatct ctaaaggtta 1140

ttttatatga gcatagaaaa tgtcactact acgaggccta ctattctacc ttcctacgca 1200

cacagtcggc ggacgctaga gacaccgccc ctgctctgct tctgttcctg cactcgcctg 1260

ctatggttca gaagaggagg gggtggtgcg tgcagagtct aagggctatg ccggataggg 1320

ccaccgcaca cctgacgtgt ctgcttgctc atttacgggt agggggggaga aagtaagaaa 1380

gagaaacgca cacactctcc tcgcggatat ttattcgtgc tttgttcggg gaaaagagag 1440

gttcttgtgt ggtgtggtaa gtgtgtgatg taggagacga agaagctcgg aaaagcggaa 1500

ggaaggagca gattggtaca gctggacgcc gttgacgctg acgcaactgt tctcggtcac 1560

gcacattcag taggaggtag ggaggtggag aagaagaaga agaagaagaa gaagaagatt 1620

ggagcggggc aaacacaaac tactcagctg agaagggtgt agcgagcagt tttgagtctc 1680

gaaataatcc cttgtagtcg ttatgatata catatacatn ttccagttgc aaccgacttc 1740

ttgaaccaaa acggaaacgt ccttcttncc tttgtcgatg ncatagntat aacaactntg 1800

gcttttntcc atgactaatn gaagaagagg gaggaggagc agctntacta gtttgattaa 1860

tcctaatgng gaataatg 1878

<210> 39
<211> 597
<212> PRT
<213> Musa acuminata

<400> 39

Ser Leu Val Arg Gly Pro Pro Arg Gly Arg Arg Tyr Arg Ala Leu Ile
1 5 10 15

Ser Ser Leu Asn Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Tyr
20 25 30

Phe Lys Tyr Gly Cys Asn Ala Glu Leu Leu Cys Leu Ser Trp Pro Asn
35 40 45

Cys Val His Leu Ala Asp Lys Ser Gly Asp Asn Val Leu Phe Thr Glu
50 55 60

Ser Thr Ala Gly Gly Pro Glu Ile Thr Ser Asp Ala His Trp Val Met
65 70 75 80

Met Ile Trp Thr Pro Pro Gln Arg Ala Ala Met Gly Cys Glu Ile His
85 90 95

Ala Ala Ile Arg Glu Ala Arg Asn Thr Arg Leu Leu Leu Phe Gln Arg
100 105 110

Ser Lys Gly Gln Ala Thr Val Thr Ile Asp Phe Phe Glu His Asp Asp
115 120 125

Asn Asp Asp Leu Leu Leu Gln Tyr Pro Ser Pro Thr Val Glu Trp Glu
130 135 140

Met Gly Leu Leu His Tyr Phe Ser Gln Glu Leu Ile Glu Ser Pro Ala
145 150 155 160

Asn Cys Cys Phe Ser Phe Leu Ile Leu Asn Leu Pro Pro Val Thr Leu
165 170 175

Lys Leu His Val Lys Thr Phe Leu Tyr Gly Ser Glu His Glu Ile Tyr
180 185 190

His Ser Asn Gly Asp Leu His Tyr His His His His His Leu His Gly
195 200 205

Phe Gly Ser Asn Thr Glu Asn Leu Ile Asn Pro Thr Ile Leu Ala Leu
210 215 220

Ala Pro Ser Pro Arg Lys Ile Gln Gln Glu Gln Gln Lys Phe Arg Met
225 230 235 240

His Ile Glu Leu Ile Trp Ser Leu Glu Asn His Gly Leu Lys Ile Leu
245 250 255

Lys Lys Ile Asn His Asn His Leu Leu Thr Leu Thr Ile His Ile Leu
260 265 270

Ser Thr Lys Phe Asp Ile Gly Phe Leu Ile Ser Tyr Ile Arg Phe Lys
275 280 285

Ile Ser Pro Phe Asp Arg Ile Asn Ile Ser Phe Asn Ser Leu Gly Lys
290 295 300

Asp Leu Ile Tyr Ile Tyr Ile Tyr Ile Phe Ile Tyr Ile Leu Thr Ile
305 310 315 320

Ser Leu Thr Arg Ile Ile Asp Gly His Ile Cys Lys Asn Pro Pro Ile
325 330 335

Val His Ser Lys Arg Ser Leu Asn Gly Arg Asn Tyr Phe Ile Ser Arg
340 345 350

Asp Phe Gln Asn Ile Leu Val Ser Phe Thr Val Met Met Leu Arg Met
355 360 365

Ile Arg Trp Lys Asp Ala Cys Val Ser Arg Leu Arg Ser Leu Trp Arg
370 375 380

Gly Arg Asp Glu Asp Lys Asp Val Ser Gly Arg Tyr Gln Val Phe Ser
385 390 395 400

Ser Pro Thr Thr His Val Ser Asp Ser Arg Tyr Gly Leu Ser Arg Trp

405 410 415

Arg Val Asp Cys Thr Asp Glu Arg Val Asn Ala His Pro Pro Ser Phe
420 425 430

Ile Leu Ser Leu Cys Val Cys Glu Arg Ser Ala Tyr Lys Ala Arg Asn
435 440 445

Lys Pro Leu Phe Ser Pro Arg Thr His His Thr Ile His Thr Leu His
450 455 460

Pro Leu Leu Leu Arg Ala Phe Ser Pro Ser Phe Leu Val Pro Cys Arg
465 470 475 480

Pro Ala Ala Thr Ala Thr Ala Leu Thr Arg Ala Ser Ala Cys Lys Ser
485 490 495

Ser Ser Ile Pro Pro Pro Leu Leu Leu Leu Leu Leu Leu Leu Leu Leu
500 505 510

Thr Ser Pro Arg Leu Cys Leu Met Ser Arg Leu Phe Pro His Arg Ser
515 520 525

Ser Lys Leu Arg Ala Leu Leu Gly Asn Ile Ser Asn Thr Ile Cys Ile
530 535 540

Cys Xaa Arg Ser Thr Leu Ala Glu Glu Leu Gly Phe Ala Phe Ala Gly
545 550 555 560

Arg Xaa Glu Thr Ala Thr Val Ser Ile Leu Leu Xaa Pro Lys Xaa Gly
565 570 575

Thr Asp Xaa Leu Leu Leu Pro Pro Pro Arg Arg Xaa Ser Asn Leu Gly
580 585 590

Leu Xaa Leu Ile Thr
595

<210> 40
<211> 590
<212> PRT
<213> Musa acuminata

<400> 40
His Trp Tyr Gly Ala Pro Leu Glu Val Asp Gly Ile Asp Lys Leu Ser
1 5 10 15

Leu Leu Ser Ile Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Cys Met
20 25 30

Ser Leu Asn Met Val Val Met Leu Asn Cys Tyr Val Tyr Leu Gly Gln
35 40 45

Thr Val Ser Ile Phe Glu Gln Ile Asn Leu Ala Ile Met Phe Phe Leu
50 55 60

Leu Lys Ala Leu Gln Asp Glu Gly Leu Lys Ser His Arg Thr Pro Thr

65 70 75 80

Gly Ser Tyr Gly Leu Leu His Ser Glu Gln Pro Trp Asp Val Arg Ser
85 90 95

Thr Gln Arg Arg Gly Lys Pro Ala Thr Leu Gly Cys Cys Cys Ser Ser
100 105 110

Lys Asp Arg Lys Val Arg Arg Gln Arg Ser Thr Phe Ser Ser Met Met
115 120 125

Thr Thr Thr Thr Cys Ser Cys Asn Ile Arg Pro Leu Pro Ser Gly Asn
130 135 140

Lys Trp Val Cys Ser Cys Thr Ile Ser Arg Arg Asn Leu Lys Ala Leu
145 150 155 160

Gln Ile Ala Val Ser Leu Ser Leu Tyr Thr Phe Leu Leu Leu His Asn
165 170 175

Cys Met Leu Arg His Phe Cys Met Asp Pro Asn Met Arg Ser Ile Ile
180 185 190

Glu Val Met Gly Arg Ile Tyr Ile Ile Ile Ile Ile Ile Ile Ser Met
195 200 205

Gly Leu Asp Leu Ile Arg Pro Lys Thr Ser Phe Lys Ile Gln Pro Tyr
210 215 220

Trp Leu Asp Leu Leu His Leu Gln Glu Lys Tyr Asn Lys Asn Asn Lys
225 230 235 240

Asn Leu Gly Cys Thr Leu Asn Phe Gly His Tyr Glu Arg Ile Asp Lys
245 250 255

Tyr Asn Lys Lys Ile Ile Ile Ile Tyr Ser Leu Arg Phe Thr Phe Tyr
260 265 270

Pro Pro Asn Leu Thr Ser Ala Ser Asn Phe His Ile Leu Gly Ser Lys
275 280 285

Lys Ser Leu Pro Leu Thr Asp Glu Ile Phe Leu Leu Ile Arg Gly Arg
290 295 300

Ile Tyr Asn Ile Tyr Ile Tyr Ile Tyr Leu Phe Ile Arg Phe Pro Phe
305 310 315 320

Leu Ser Pro Glu Tyr Glu Ser Thr Ala Ile Ser Ala Lys Thr His Gln
325 330 335

Leu Phe Thr Val Asn Ala His Ile Lys Val Glu Ile Thr Phe Lys Phe
340 345 350

Leu Glu Ile Ser Asn Lys Ile Tyr Ser Tyr Leu Leu Gln Cys Ser Gly
355 360 365

Asp Gly Arg Met Arg Val Ser Ala Ala Cys Asp Leu Cys Gly Gly Asp
370 375 380

Glu Thr Lys Thr Arg Thr Ala Asp Asp Thr Lys Ser Ser Pro Pro Pro
385 390 395 400

Pro Arg Thr Ser Gln Ile Pro Asp Thr Ala Tyr Pro Gly Gly Val Trp
405 410 415

Thr Ala Gln Thr Asn Glu Met Pro Ile Pro Pro Leu Ser Phe Phe Leu
420 425 430

Phe Ala Cys Val Arg Gly Ala Pro Ile Asn Lys His Glu Thr Ser Pro
435 440 445

Phe Ser Leu Gln Glu His Thr Thr Pro Phe Thr His Tyr Ile Leu Cys
450 455 460

Phe Phe Glu Pro Phe Arg Leu Pro Ser Ser Ser Asn His Val Asp Leu
465 470 475 480

Arg Gln Leu Arg Leu Arg Gln Glu Pro Val Arg Val Ser His Pro Pro
485 490 495

Ser Leu His Leu Phe Phe Phe Phe Phe Phe Phe Phe Phe Pro Arg Pro
500 505 510

Val Cys Val Val Asp Ser Ser His Ile Arg Ala Gln Asn Ser Glu Leu
515 520 525

Tyr Gly Thr Ser Ala Ile Leu Tyr Val Tyr Val Xaa Gly Gln Arg Trp
530 535 540

Leu Lys Asn Leu Val Leu Pro Leu Gln Glu Glu Xaa Lys Gln Leu Xaa
545 550 555 560

Tyr Xaa Tyr Cys Xaa Arg Lys Xaa Val Leu Ile Xaa Phe Phe Ser Leu
565 570 575

Leu Leu Val Xaa Asp Asp Gln Thr Asn Asp Tyr Xaa Leu Leu
580 585 590

<210> 41
<211> 441
<212> PRT
<213> Musa acuminata

<400> 41
Thr Gly Thr Gly Pro Pro Ser Arg Ser Thr Val Ser Ile Ser Phe Asp
1 5 10 15

Leu Phe Ser Gln Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Val
20 25 30

Cys Leu Ile Trp Leu Cys Ile Ala Met Phe Ile Leu Ala Lys Leu Cys
35 40 45

Pro Ser Leu Ser Arg Ile Trp Arg Cys Ser Phe Tyr Lys His Cys Arg
50 55 60

Met Arg Ala Asn His Ile Gly Arg Pro Leu Gly His Asp Asp Met Asp
65 70 75 80

Ser Ser Thr Ala Ser Ser His Gly Met Asp Pro His Ser Ser Val Asp
85 90 95

Lys Gly Ser Pro Gln His Ala Val Val Val Pro Val Lys Ile Glu Arg
100 105 110

Ser Gly Asp Ser Asp Asp Arg Leu Phe Arg Ala Gln Arg Arg Pro Ala
115 120 125

Pro Ala Ile Ser Val Pro Tyr Arg Arg Val Gly Ile Asn Gly Phe Val
130 135 140

Val Ala Leu Phe Leu Ala Gly Ile Asn Lys Pro Cys Lys Leu Leu Phe
145 150 155 160

Leu Phe Pro Tyr Ile Lys Pro Ser Ser Cys Tyr Ile Lys Ile Ala Cys
165 170 175

Asp Ile Ser Val Ser Trp Ile Arg Thr Asp Leu Ser Leu Lys Trp Val
180 185 190

Gly Phe Thr Leu Ser Ser Ser Ser Ser Ser Pro Trp Val Trp Ile Leu
195 200 205

Asp Arg Lys Pro His Leu Lys Ser Asn Pro Asn Ile Gly Leu Thr Cys
210 215 220

Ser Ile Ser Lys Lys Asn Thr Thr Arg Thr Thr Lys Ile Asp Ala His
225 230 235 240

Ile Asp Leu Val Thr Met Arg Glu Ser Trp Ile Lys Asn Ile Lys Ile
245 250 255

Lys Asn Lys Ser Ser Ser Thr His Ser Asn Asp Ser His Ser Ile His
260 265 270

Gln Ile His Arg Leu Leu Ile Asn Phe Ile Tyr Val Leu Lys Asn Leu
275 280 285

Ser Leu Gln Met Asn Lys Tyr Phe Phe Phe Val Arg Glu Gly Ser Asn
290 295 300

Ile Ile Tyr Ile Tyr Ile Tyr Leu Arg Ser Lys Leu Leu Leu Asn Phe
305 310 315 320

Arg Phe Pro Ile Lys Tyr Thr Arg Ile Phe Tyr Ser Asp Asp Ala Pro
325 330 335

Asp Asp Lys Met Glu Gly Cys Val Cys Gln Pro Pro Ala Ile Ser Val
340 345 350

Ala Gly Thr Arg Arg Arg Gln Gly Arg Glu Arg Thr Ile Pro Ser Leu
355 360 365

Leu Leu Pro His His Ala Arg Leu Arg Phe Pro Ile Arg Pro Ile Pro

370 375 380

Val Ala Cys Gly Leu His Arg Arg Thr Ser Lys Cys Pro Ser Pro Leu
385 390 395 400

Phe His Ser Phe Ser Leu Arg Val Glu Glu Arg Leu Ile Ser Thr Lys
405 410 415

Gln Ala Pro Phe Leu Ser Lys Asn Thr Pro His His Ser His Thr Thr
420 425 430

Ser Ser Ala Ser Ser Ser Leu Phe Ala
435 440

<210> 42
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer.

<400> 42
gatcgccatg gtgaatg 17

<210> 43
<211> 17
<212> DNA
<213> Artificial Sequence
<220>
<223> Primer.

<400> 43
gtaaaacgac ggccagt 17

<210> 44
<211> 2156
<212> DNA
<213> Musa acuminata

<220>
<221> misc_feature
<222> (507)
<223> Nucleotide at position 507 is "s" wherein "s" = c or g.

<220>
<221> misc_feature
<222> (879)
<223> Nucleotide at position 879 is "n" wherein "n" = a, c, g, or t.

<400> 44
ggatcccaac ttttaggaat ggatcttaaa attttagtta taagttcaaa gttagaaaaa 60

tctttaccaa gagctttgag tccattgatg acatccgtga aacggtgtac atgtctccga 120

tggactcact tggtttcatt cggaaaagtt cgaaagagtg cataagaata ttgattttgg 180

attctttcac tcggttggtg ccttcatgag tgacctcaag agtcctccaa atatcaaaag 240

ccgaatcaca aattgaaatg tgattgaatt cattttttgtc taatgcacaa aacagggcat 300

tcatagcctt tgtgtttaaa gcaaaaacat tcttctccga ttcatcccat tcgctcatcg 360

gaagagaaaa tttttgaaat ccattttcga caatagacca aagctcgaaa tccatggaaa 420

tgaggaagat cctcatatga gttttccaat acatgtaatt cgactcatta aacataggtg 480

gatgtgtaat gaaatgaccc tcatgcscta tctctcttgg gtattaaacc aaatatgaga 540

gtgagccttg ctctgatacc aattgttagg atcagagtgg cactaagaga gggggggagt 600

gaattagtgc agtggattaa aacttataag tttaaaaatg aattcgtaaa tacgagaaga 660

tttcgtttta atagtaactt gagtagatga aaaccaaaag ttaacagtag tgtaaataac 720

aatttcggga aagtaagaac tcacacattc aaggaacata ccaatttaaa gtggttcggt 780

caaaatgacc tacatccact tgtgaagcct tcttcgaaga ggctcccaac ttccactagc 840

aaatcacttt gaaggggaag gacaaatacc tctcttacna ccttttacaa tggttcatac 900

tcttacaaat tttcaacgag aaagaaggag gtgaacatgc aagcaattga aaacaagact 960

tgctaaagac tttgctaagg ctttttttct caatctattg cttctcaaaa gttgtattct 1020

ctgctgagaa ttgaggggta tttatagacc ccaagaggat ttaaatttgg gctccaaatt 1080

tcgaatgctc ttgggttccc gaggttgccg gtgccaccgc ctgtcagtgt ttgacactgg 1140

acagtgtact agcggtgcca ccgccggacc tctcgggtgt tgggcggtgc caccgcctag 1200

acttttttcag ctcactggtt ggattccaaa cttgacccaa accagtccga actcgggtcc 1260

aattgacccg taaccggatt ataggattaa cccttaatcc taaccctaat tatatgcaaa 1320

ctacgcaact gaaaatatag tcctaagcaa gtttttaacc ggcaaacgtc gagtcttctt 1380

ccggcgatct ttcggcagac ttctgatata cctttggatt tcttctagcg gactcctagt 1440

agggtcccga tcttgtggcg agtttagcga gtagccgaac cttctcggtg atctccgcaa 1500

accgccgatg atctcttcgg cagactttcg aaaacttcga caagtccccg atttcttctc 1560

ggttggttcc gacagcatct ctaacgaaac ttcggactcc ttgaatgtcc atcgaacttg 1620

actccggtag gcttgcttta tattttcagg ctatcatagt taatcctaca tacttaactc 1680

aataatatgg attagattaa ttaacccatc aattgatttc atcatcaaaa ttcgacattc 1740

aacaaacatc cgtactcaat aacccatcag gctatagtta cgtgactatc tactgtgatc 1800

cgtacgtgaa gttagcgagt catgatccag gtcgtgtcac ttattggccg aacacgtatc 1860

ccttatccaa atccagtctt ctcaactctt ctagcctacc cgtctctttt tttattactt 1920

ttgaaagaat tcaaatcaaa acagatacaa aataacacgg tgagacactg tgacatgcta 1980

gtctctggaa agcattaatt cgcgcatcca cagacgtcgt cagcttcatc acccactttt 2040

tcctacatac catgtcgcat ggctttgttg atgacagacc accacaagct tgcctttggt 2100

tgtgcctaac agagagagag agagagacag accgatagcc tcctcattca ctatgg 2156

<210> 45
<211> 2160
<212> DNA
<213> Musa acuminata

<220>
<221> misc_feature
<222> (511)
<223> Nucleotide 511 is "s" wherein "s" = c or g.

<220>
<221> misc_feature
<222> (883)
<223> Nucleotide 883 is "n" wherein "n" = a, c, g, or t.

<400> 45
ggatcccaac ttttaggaat ggatcttaaa attttagtta taagttcaaa gttagaaaaa 60

tctttaccaa gagctttgag tccattgatg acatccgtga aacggtgtac atgtctccga 120

tggactcact tggtttcatt cggaaaagtt cgaaagagtg cataagaata ttgattttgg 180

attctttcac tcggttggtg ccttcatgag tgacctcaag agtcctccaa atatcaaaag 240

ccgaatcaca aattgaaatg tgattgaatt cattttgtc taatgcacaa aacagggcat 300

tcatagcctt tgtgtttaaa gcaaaaacat tcttctccga ttcatcccat tcgctcatcg 360

gaagagaaaa tttttgaaat ccattttcga caatagacca aagctcgaaa tccatgcatg 420

gaaatgagga agatcctcat atgagttttc caatacatgt aattcgactc attaaacata 480

ggtggatgtg taatgaaatg accctcatgc sctatctctc ttgggtatta aaccaaatat 540

gagagtgagc cttgctctga taccaattgt taggatcaga gtggcactaa gagaggggg 600

gagtgaatta gtgcagtgga ttaaaactta taagtttaaa aatgaattcg taaatacgag 660

aagatttcgt tttaatagta acttgagtag atgaaaacca aaagttaaca gtagtgtaaa 720

taacaatttc gggaaagtaa gaactcacac attcaaggaa cataccaatt taaagtggtt 780

cggtcaaaat gacctacatc cacttgtgaa gccttcttcg aagaggctcc caacttccac 840

tagcaaatca ctttgaaggg gaaggacaaa tacctctctt acnacctttt acaatggttc 900

atactcttac aaattttcaa cgagaaagaa ggaggtgaac atgcaagcaa ttgaaaacaa 960

gacttgctaa agactttgct aaggcttttt ttctcaatct attgcttctc aaaagttgta 1020

ttctctgctg agaattgagg ggtatttata gacccccaaga ggatttaaat ttgggctcca 1080

aatttcgaat gctcttgggt tcccgaggtt gccggtgcca ccgcctgtca gtgtttgaca 1140

ctggacagtg tactagcggt gccaccgccg gacctctcgg gtgttgggcg gtgccaccgc 1200

ctagactttt tcagctcact ggttggattc caaacttgac ccaaaccagt ccgaactcgg 1260

gtccaattga cccgtaaccg gattatagga ttaaccctta atcctaaccc taattatatg 1320

caaactacgc aactgaaaat atagtcctaa gcaagttttt aaccggcaaa cgtcgagtct 1380

tcttccggcg atctttcggc agacttctga tataccttttg gatttcttct agcggactcc 1440

tagtagggtc ccgatcttgt ggcgagttta gcgagtagcc gaaccttctc ggtgatctcc 1500

gcaaaccgcc gatgatctct tcggcagact ttcgaaaact tcgacaagtc cccgatttct 1560

tctcggttgg ttccgacagc atctctaacg aaacttcgga ctccttgaat gtccatcgaa 1620

cttgactccg gtaggcttgc tttatatttt caggctatca tagttaatcc tacatactta 1680

actcaataat atggattaga ttaattaacc catcaattga tttcatcatc aaaattcgac 1740

attcaacaaa catccgtact caataaccca tcaggctata gttacgtgac tatctactgt 1800

gatccgtacg tgaagttagc gagtcatgat ccaggtcgtg tcacttattg gccgaacacg 1860

tatcccttat ccaaatccag tcttctcaac tcttctagcc tacccgtctc tttttttatt 1920

acttttgaaa gaattcaaat caaaacagat acaaaataac acggtgagac actgtgacat 1980

gctagtctct ggaaagcatt aattcgcgca tccacagacg tcgtcagctt catcacccac 2040

tttttcctac ataccatgtc gcatggcttt gttgatgaca gaccaccaca agcttgcctt 2100

tggttgtgcc taacagagag agagagagag acagaccgat agcctcctca ttcaccatgg 2160